Reportable Infectious Diseases in Maine

2005 Summary

The Department of Health and Human Services
Maine Center for Disease Control and Prevention
Division of Infectious Disease

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This is the twelfth consecutive annual report on infectious diseases in Maine published by the Division of Infectious Disease. It is intended to provide an overview of communicable diseases of public health importance in Maine.

This report would not be possible without the continued support of our healthcare and public health partners throughout the state. They have expended considerable time handling infectious diseases that impact Maine residents. Their active and critical role in the infectious disease surveillance cycle translates into statewide policies and programs that protect our residents from infectious disease through health promotion, disease prevention, and early detection, containment, and treatment.

We encourage our partners' continued support and vigilance in our efforts to protect the people of Maine through timely, complete, and accurate infectious disease reporting. The better we are able to prevent and control disease now, the better positioned we will be to respond to emerging infectious disease threats in the future.

For more information on what, when, and how to report infectious disease, please see *Appendix A (Notifiable Conditions List)* of this report, visit our website at www.mainepublichealth.gov, or call 1-800-821-5821.

We hope you find this report useful as we all work to protect and promote the health of Maine's residents.

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INTRODUCTION

Overview of Public Health Surveillance

The responsibility of governments to control and prevent disease in the population dates back hundreds of years. Government responsibility was exercised during the epidemics of plague, syphilis, and smallpox in the Middle Ages to identify possible sources of disease, isolate infectious cases, and quarantine their contacts in order to prevent further spread of disease. Illness was monitored, regulations were enacted to prevent pollution of streets and public water supplies, and instructions were made for appropriate methods of burial and food handling.

Infectious disease surveillance in the United States began soon after the colonies were established. In 1741 Rhode Island passed legislation requiring tavern keepers to report contagious disease among their patrons. Two years later, Rhode Island enacted legislation requiring the reporting of smallpox, yellow fever, and cholera.

National disease surveillance began in 1850, when mortality statistics were first published by the federal government based on the decennial census. The legal requirement to collect national morbidity data in the United States was initiated in 1878, when Congress authorized the US Public Health Service to collect reports of the occurrence of quarantineable diseases including cholera, plague, smallpox, and yellow fever.

Today, a total of 61 infectious diseases are nationally reportable; 68 are reportable in Maine. The list of reportable infectious diseases changes periodically. Diseases may be added to the list as new pathogens emerge or when a previously recognized pathogen becomes more important. Also, some diseases may be deleted from the list as their incidence or importance declines. While modern advances in sanitation, personal hygiene and immunizations serve to provide greater control and prevention of some diseases, other infectious diseases continue to thrive and still other yet to be identified infectious disease entities are constantly emerging.

The Maine Center for Disease Control and Prevention works with healthcare providers and laboratorians to gather infectious disease information, analyze it, and provide reports in a timely manner.

Surveillance data are useful for identifying situations that require immediate public health action, such as disease outbreaks; identifying emerging diseases, including identifying populations at higher risk of infection; monitoring trends in the burden of disease; guiding the planning, implementation and evaluation of disease prevention and treatment programs; and forming public policy, including the allocation of heath care resources.

The public health "patient" is the community, and information about that community can be useful to the clinician providing care to the individual. Partnership between public health professionals and health care providers is critical to assure accurate, representative, and timely information for all.

Basic Information about Disease Reporting in Maine

Who - Health Care Providers, medical laboratories, health care facilities, administrators, health officers and veterinarians are required to report notifiable diseases to the Maine Center for Disease Control and Prevention**.**

When - Diseases that are possible indicators of bioterrorism and thirteen other diseases requiring specific and prompt public health response are to be reported immediately. The remainder of notifiable conditions are to be reported within 48 hours of recognition or strong suspicion of disease.

How - Disease reports may be made by telephone or fax to the Maine Center for Disease Control and Prevention 24 hours a day, 7 days a week. The reporting numbers are toll free: telephone 1-800-821-5821 and fax 1-800-293-7534. An epidemiologist is on call 24 hours a day, 7 days a week to respond to public health emergencies. Disease reports may also be mailed to the Division of Infectious Disease, 286 Water Street, 8th Floor, Key Plaza, 11 State House Station, Augusta, Maine 04333-0011.

Where - Up to date information regarding infectious disease incidence in Maine is available at http://www.maine.gov/dhhs/boh/ddc/indexnew.htm

What - Infectious disease and notifiable conditions reportable in Maine are listed on the Maine Center for Disease Control and Prevention website, along with the Rules for the Control of Notifiable Conditions.

Purpose of Report

The annual report of infectious diseases fulfills multiple functions. First, it allows public health officials to quantify the magnitude of certain problems. For example, surveillance data indicate the spread of West Nile Virus within Maine. Second, the report allows us to evaluate the effectiveness of our prevention measures. For example, the incidence of vaccine preventable diseases provides evidence about the effectiveness of the state's immunization program. Third, data in the report allow us to detect changes in health care practice. For example, is hepatitis B vaccine and immune globulin being given at birth to children born to women who are chronic carriers? Fourth, the report helps us plan for future events. For example, data on HIV and AIDS help to establish the need for treatment resources, including antiviral medications for the indigent. Finally, the report serves as an historical document of public health surveillance data providing information on the descriptive epidemiology of reportable infectious diseases in Maine.

2005 Infectious Disease Surveillance Highlights

Bioterrorist agents - None of the potential agents of bioterrorism were reported in Maine during the past year.

Enteric diseases - Campylobacteriosis and giardiasis were the two most commonly reported enteric infections in Maine in 2005. Multiple outbreaks of gastrointestinal disease were reported during the year although an etiologic agent was not identified in many cases. A large outbreak of shigellosis occurred at a country club in York County.

Respiratory diseases - The overall number of TB cases declined slightly in 2005; just under half of cases were among the foreign-born. Activities for influenza surveillance were enhanced to better prepare for a possible pandemic.

Sexually transmitted infections - Chlamydia remained the most commonly reported infectious disease in Maine with 2,253 cases in 2005. Fifty-eight new cases of HIV were also reported.

Vaccine preventable disease - Pertussis decreased from 196 in 2004 to 55 in 2005. Two cases of mumps were reported in persons from overseas who were in Maine for summer camp. A prolonged outbreak of varicella occurred in an elementary school in Brunswick.

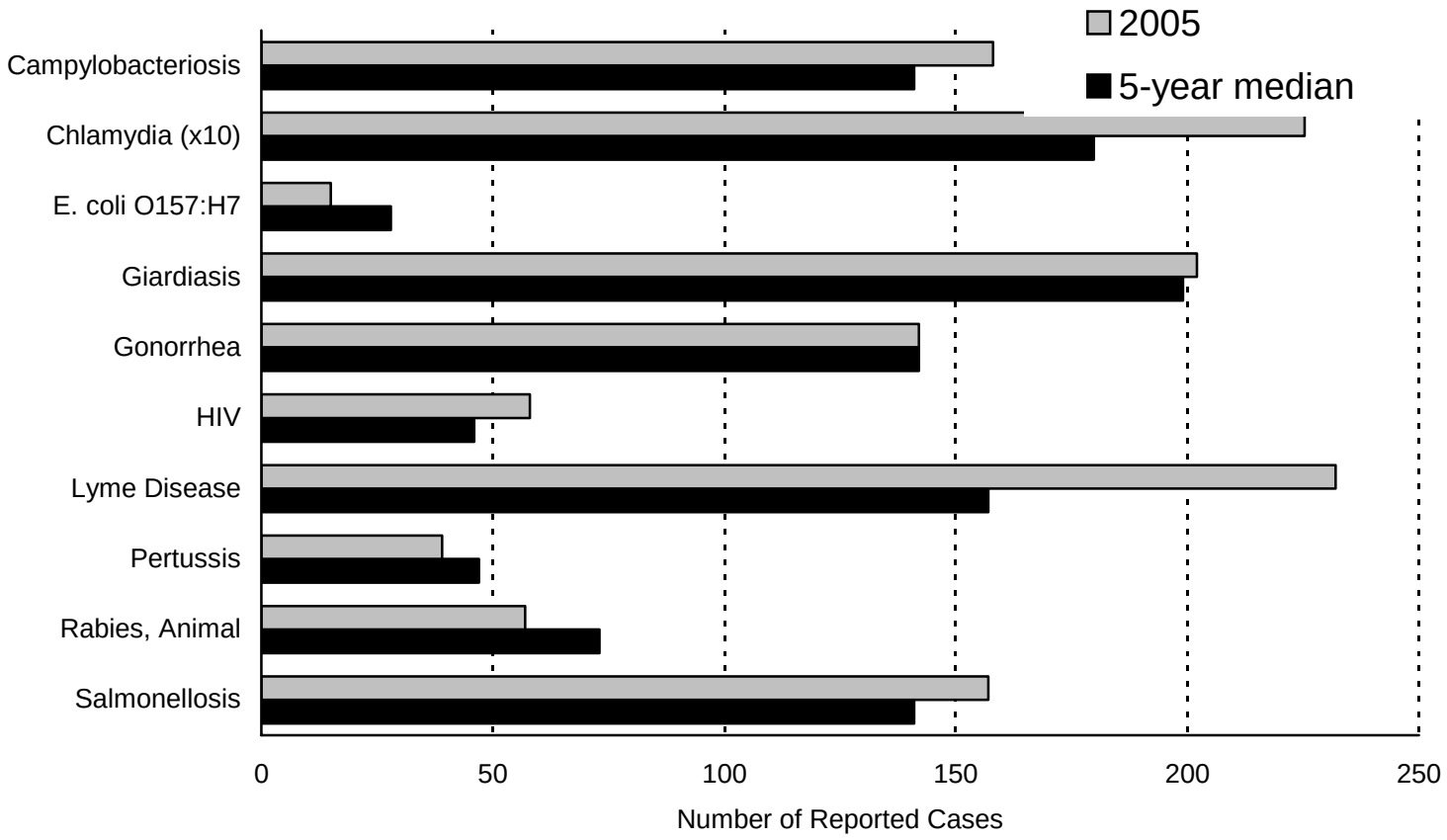
Vectorborne diseases - Surveillance for West Nile Virus identified infected birds and mosquitoes, but human cases have yet to be reported in the state. Surveillance for Eastern Equine Encephalitis identified infected birds, mosquitoes and horses, but no humans. Lyme disease continued to be the most commonly reported vectorborne disease with 247 cases in 2005.

Zoonotic diseases – There were 61 animals that tested positive for rabies in Maine in 2005. These positive cases of rabies occurred in three different wildlife species (raccoon, skunk, and bat); there were no rabies cases in domestic species.

Selected Reportable Diseases by Year -- Maine, 2000-2005

Disease	2000	2001	2002	2003	2004	2005
AIDS	44	45	27	50	49	23
BABESIOSIS	0	1	2	3	5	11
BOTULISM, FOODBORNE	0	0	2	0	1	0
CAMPYLOBACTERIOSIS	149	124	140	147	142	159
CHLAMYDIA	1474	1346	1801	2040	2120	2253
CRYPTOSPORIDIOSIS	20	20	12	20	22	30
CYCLOSPORIASIS	0	0	0	0	1	0
EHRLICHIOSIS	1	1	1	1	1	6
ESCHERICHIA COLI 0157:H7	32	29	39	11	16	16
GIARDIASIS	238	197	213	185	151	203
GONORRHEA	90	141	142	231	214	142
HANTAVIRUS (PULMONARY)	0	0	0	0	0	0
H. INFLUENZAE (HIB-INVASIVE)	2	2	2	6	15	1
HEMOLYTIC UREMIC SYNDROME	0	1	3	0	2	0
HEPATITIS A	23	11	9	16	17	9
HEPATITIS B (ACUTE)	6	7	14	6	12	14
HIV INFECTION	51	40	39	55	46	58
LEGIONELLOSIS	2	8	6	2	1	7
LISTERIOSIS	2	2	5	7	8	3
LYME DISEASE	71	108	219	175	225	247
MALARIA	7	7	5	6	7	5
MEASLES	0	0	0	0	0	0
MENINGOCOCCAL DISEASE	10	8	7	13	12	2
MUMPS	0	0	0	0	0	2
PERTUSSIS	51	23	21	91	196	55
POWASSAN, ENCEPHALITIS	0	0	0	0	1	0
PSITTACOSIS	0	0	0	0	1	0
RABIES (ANIMAL)	139	85	67	82	69	61
RUBELLA	0	0	0	0	0	0
SALMONELLOSIS	127	168	147	132	110	164
SHIGELLOSIS	11	6	10	7	13	15
STREPTOCOCCAL (GpA-INVASIVE)	12	12	20	30	15	14
STREPTOCOCCAL (GpB-INVASIVE)	13	18	27	12	30	28
STREP PNEUMO (DR-INVASIVE)	0	0	0	0	4	8
SYPHILIS (EARLY)	1	4	3	15	2	3
TUBERCULOSIS	24	20	23	24	20	17
TOXIC SHOCK SYNDROME	2	0	1	1	1	0
VARICELLA	1271	146	792	1012	363	318
VIBRIO SPECIES	0	1	4	3	4	2
YERSINIOSIS	3	2	0	0	0	0

Selected Reportable Diseases
Maine, 2005 and Five-Year Median



VACCINE-PREVENTABLE DISEASES

Influenza

Influenza is a viral illness that typically occurs during the winter months. Uncomplicated influenza is characterized by the abrupt onset of fever, myalgia (e.g., muscle aches), headache, malaise, non-productive cough, sore throat, and rhinitis (e.g., runny nose). In some persons, influenza can exacerbate underlying medical conditions or lead to secondary bacterial or primary viral pneumonia. Influenza viruses cause disease among all age groups with the highest rates of infection occurring in children and the highest rates of serious influenza-related complications and death among the elderly, very young children, and persons of all ages with underlying medical conditions. Influenza-like illness (ILI) is a term used to describe illness that presents with symptoms typical of influenza, but that has not been confirmed by a laboratory test. ILI is defined as fever greater than or equal to 100'F (37.8'C), cough, and/or sore throat, in the absence of a known cause other than influenza.

The purpose of influenza surveillance is to inform influenza prevention and control policy. During the 2005-2006 influenza season, the Maine Center for Disease Control and Prevention conducted influenza surveillance in collaboration with multiple public and private agencies. Eighteen health care providers, three laboratories, and three city vital records officers were engaged during the 33-week reporting period from October 2, 2005 to May 20, 2006. Specific objectives of the system included:

- Tracking the onset and on-going transmission of influenza and influenza-like illness (ILI) in Maine,
- Limiting the transmission of influenza among high-risk populations,
- Monitoring the specific influenza viruses circulating within the State,
- Providing an infrastructure for pandemic influenza planning, and
- Targeting influenza vaccine strategies.

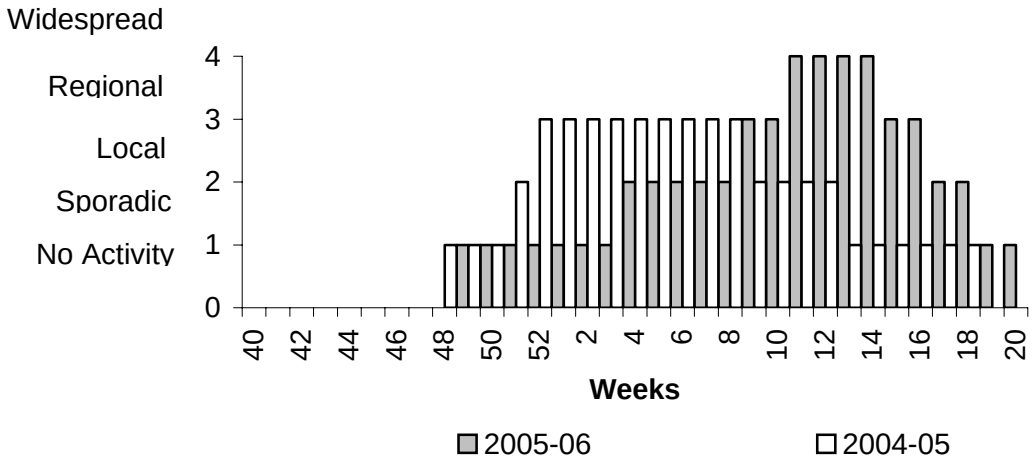
This report summarizes 2005-2006 influenza surveillance by key indicators: 1) weekly characterization of statewide influenza activity by the state epidemiologist; 2) outpatient influenza-like illness; 3) hospital inpatient surveillance for respiratory illness (admitted from the emergency department); 4) laboratory report of culture-positive influenza; 5) outbreaks of influenza; 6) select city vital records for influenza and pneumonia mortality data; 7) individual case reports of influenza-associated pediatric deaths; and 8) enhanced monitoring for novel influenza virus.

Statewide Influenza Activity Level

The Maine Center for Disease Control and Prevention (Maine CDC) reports to the federal Centers for Disease Control and Prevention the estimated level of influenza activity in Maine each week. The state influenza activity level is determined using influenza surveillance data collected during the previous week. The influenza activity levels (with definition) are as follows: No Activity (no laboratory-confirmed cases of influenza and no reported increase in the number of cases of ILI); Sporadic (small numbers of laboratory-confirmed influenza cases or a single influenza outbreak has been reported, but there is no increase in cases of ILI); Local (outbreaks of influenza or increases in ILI cases and recent laboratory-confirmed influenza in a single region of the

state); Regional (outbreaks of influenza or increases in ILI and recent laboratory confirmed influenza in at least two but less than half the regions of the state); and Widespread (outbreaks of influenza or increases in ILI cases and recent laboratory-confirmed influenza in at least half the regions of the state). A summary of Maine influenza activity levels is shown in the figure. Compared to last season when influenza activity peaked during week 1, 2005-2006 influenza activity peaked later in the season during week 11.

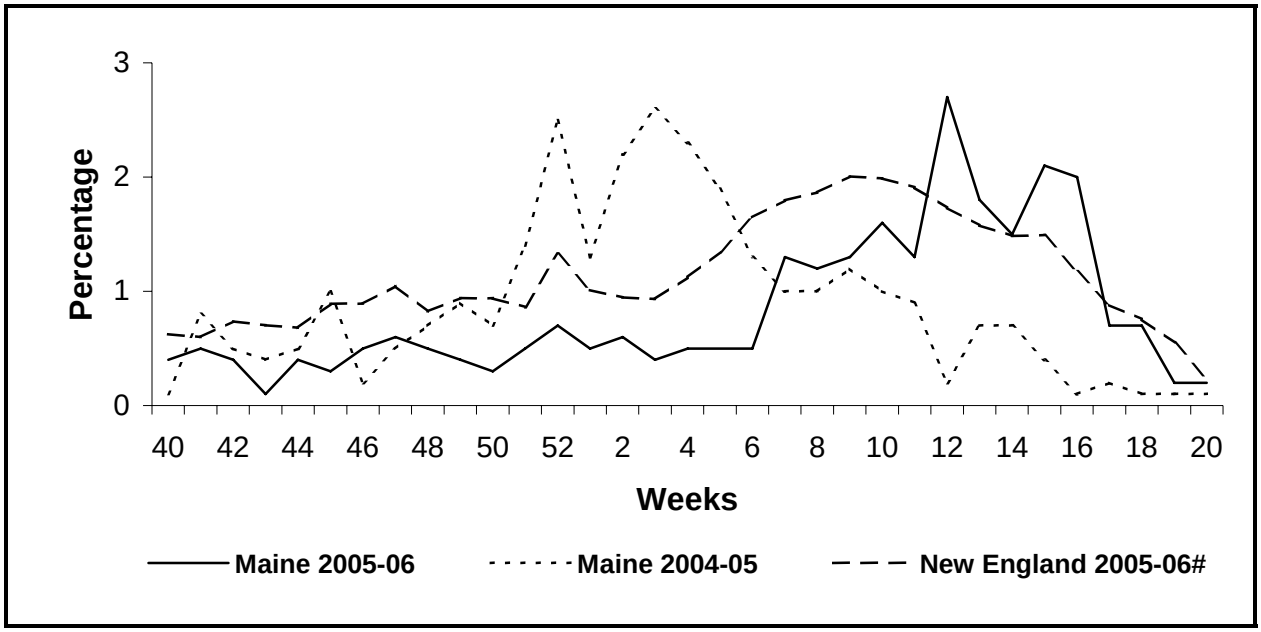
Influenza Activity Levels -- Maine, 2004-2006



Sentinel Provider Surveillance -- Outpatient influenza-like illness (ILI)
Outpatient ILI data are collected through the U.S. Influenza Sentinel Provider Surveillance Network, a collaborative effort between the Centers for Disease Control and Prevention (CDC), Maine CDC, and local health care providers. During the 2005-2006 season, 16 providers participated and reported the total number of patients seen in their practices and the number of those patients seen for ILI by 4 different age groups (0-4 years, 5-24 years, 25-64 years, and ≥65 years) on a weekly basis. From these data, the percent of patient visits for ILI was calculated.

Maine sentinel providers reported 99,061 patient-visits during the 2005-2006 season, 785 (0.8%) of which were for ILI. During week 40 (October 2-8, 2005), 0.4% patient-visits were for ILI . Outpatient ILI visits gradually increased, and peaked during week 12 (March 19-25, 2006) when sentinel providers reported 2.7% patient-visits as ILI-related. A second peak was observed during week 15 (April 9-15, 2006) when 2.1% of patients seen were ILI-related, followed by a steady decline in outpatient visits for the remained of the season.

Percentage of Patient Visits for Influenza-like Illness -- Maine, 2004-2006

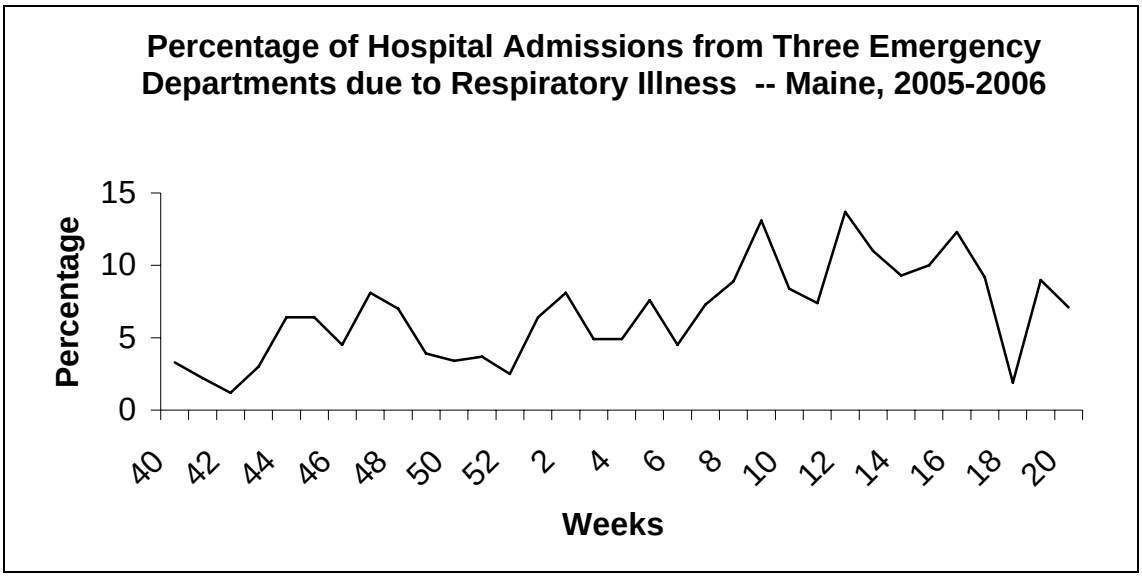


#The New England region included the following reporting areas: Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont.

Hospital admissions

Inpatient surveillance for respiratory illness admissions was conducted in collaboration with three regional resource center hospitals. On a weekly basis, hospitals reported the total number of patients admitted to the hospital from the emergency department and the total number of those patients admitted for respiratory illness. Two hospitals used patient admission codes and/or chief complaint data and one hospital used patient discharge ICD-9 codes 480-487 to identify respiratory illness admissions.

The three emergency departments reported 7,867 hospital admissions, 477 (6.1%) of which were due to respiratory illness. During week 40 (October 2-8, 2005), 0.3% of hospital admissions from emergency departments were due to respiratory illness. Emergency department admissions for respiratory illness peaked during week 12 (March 19-25, 2006) when participating hospitals reported 13.7% of emergency department admissions as respiratory illness-related. A steady decline in hospital admissions for respiratory illness followed.

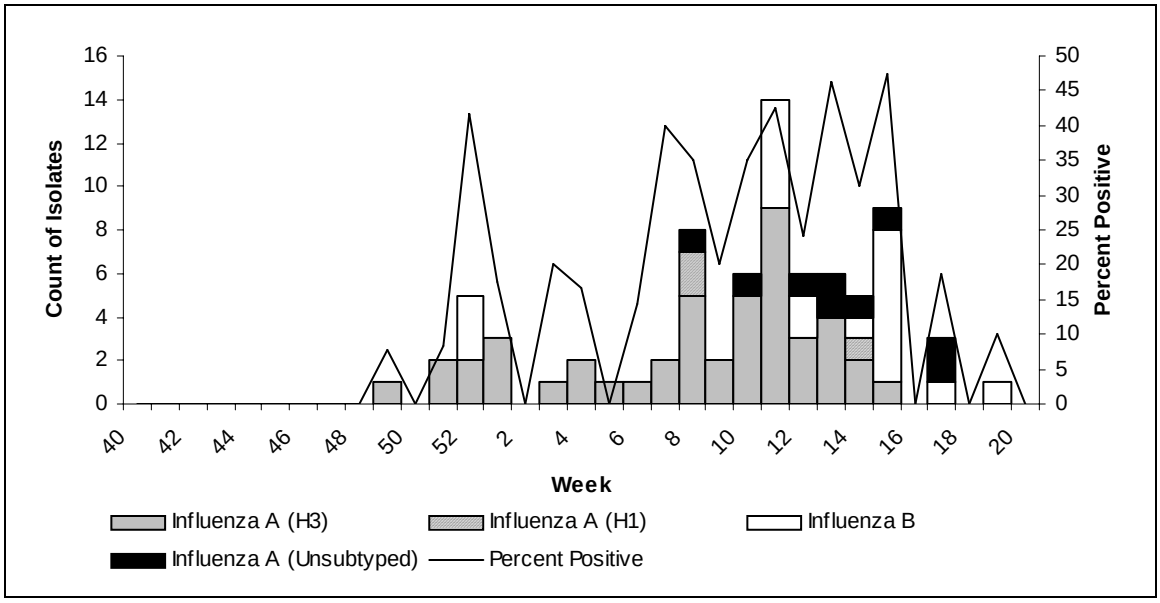


Laboratory Reporting

The Maine Health and Environmental Testing Laboratory (HETL) worked collaboratively with hospitals and private laboratories to collect specimens for respiratory virus testing and influenza positive isolate subtyping. Each week HETL reported the total number of specimens received for respiratory virus testing and the number of positive isolates for influenza A (H1), A (H3), A (Undetermined), and influenza B by specimen collection date. These data were used to calculate the percent of specimens received that were positive for influenza, and the proportion of isolates positives for each subtype.

During the 2005-2006 influenza season, a total of 351 respiratory specimens were submitted for viral testing to HETL. Seventy-four specimens (21.1%) were positive for influenza (49 for influenza A [H3], 3 for influenza A [H1], 4 for influenza A [unsubtyped], and 18 for influenza B). Influenza activity peaked during week 15, when 47.4% of respiratory specimens were culture-positive, though high activity was also observed during weeks 11 (42.4% specimens culture-positive) and 13 (46.2% specimens culture-positive). Influenza B was identified more commonly after week 15, whereas during previous weeks influenza A was the predominant strain. Culture-positive influenza was identified in 11 Maine counties, including Androscoggin, Aroostook, Cumberland, Franklin, Kennebec, Knox, Lincoln, Oxford, Penobscot, Piscataquis and Somerset. Specimens submitted to HETL were forwarded to CDC for additional characterization, and results indicated the influenza A virus strains that circulated in Maine this season (A/Wisconsin/67/2005-like [H3N2] and A/New York/55/2004-like [H3N2]) matched well with the strains contained in the 2005-2006 vaccine (A/California/07/2004-like).

Percentage of Submitted Respiratory Specimens Positive for Influenza – Maine Health and Environmental Testing Laboratory, 2005-06



HETL performed Polymerase Chain Reaction (PCR) testing for influenza viruses in parallel with conventional culture throughout the 2005-2006 season. PCR tests were used to detect influenza A and B viruses, and those specimens testing positive for influenza A were subsequently tested for H1 and H3 subtypes using an additional PCR test.

During the 2005-2006 season, 200 specimens were tested for influenza by PCR; of these, 87 (43.5%) were positive. By culture, 76 (38%) of these 200 specimens were positive for influenza. Fourteen specimens were positive for influenza by PCR, but not confirmed by positive culture results. Thirteen (92.9%) of 14 PCR-positive specimens not confirmed by culture were confirmed by positive influenza PCR subtyping. The sensitivity and specificity of influenza PCR tests were 99.6% and 99.1%, respectively.

Influenza test results by PRC and Culture – Maine Health and Environmental Testing Laboratory, 2005-2006

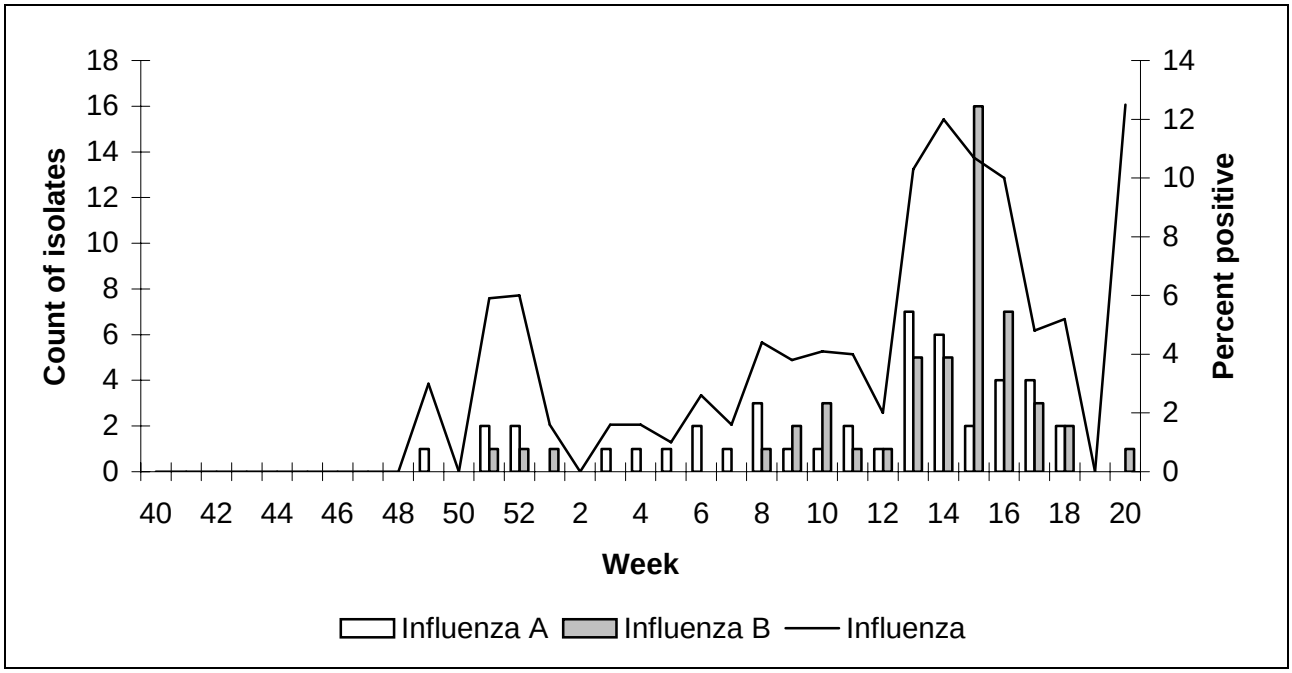
	Culture Positive	**Culture Negative**	**Total**
PCR	No. (%)	No. (%)	No.
Positive	86 (98.9)	1 (1.1)	87
Negative	3 (2.7)	110 (97.3)	113
Total	89	111	200

Two reference laboratories in Maine participated in 2005-2006 influenza surveillance activities. Each week they reported the total number of positive isolates for influenza A, influenza B, or influenza A/B that were laboratory-confirmed by culture, reverse-transcriptase polymerase chain reaction (RT-PCR), or immunofluorescent antibody

staining (direct or indirect), and the total number of specimens negative by final test result date. Other respiratory viral infections were also identified through respiratory virus testing, including adenoviruses and respiratory syncytial viruses (RSV).

During 2005-2006 influenza season, 94 (4.7%) of 1,989 respiratory specimens submitted for viral testing were confirmed as influenza by the reference laboratories; 44 (46.8%) were influenza A and 50 (53.2%) were influenza B. Influenza activity reported by the reference laboratories peaked during weeks 14 and 20, when 12.0% and 12.5% of specimens submitted were positive.

Percentage of Submitted Respiratory Specimens Culture-Positive for Influenza – Two Reference Laboratories, Maine 2005-06



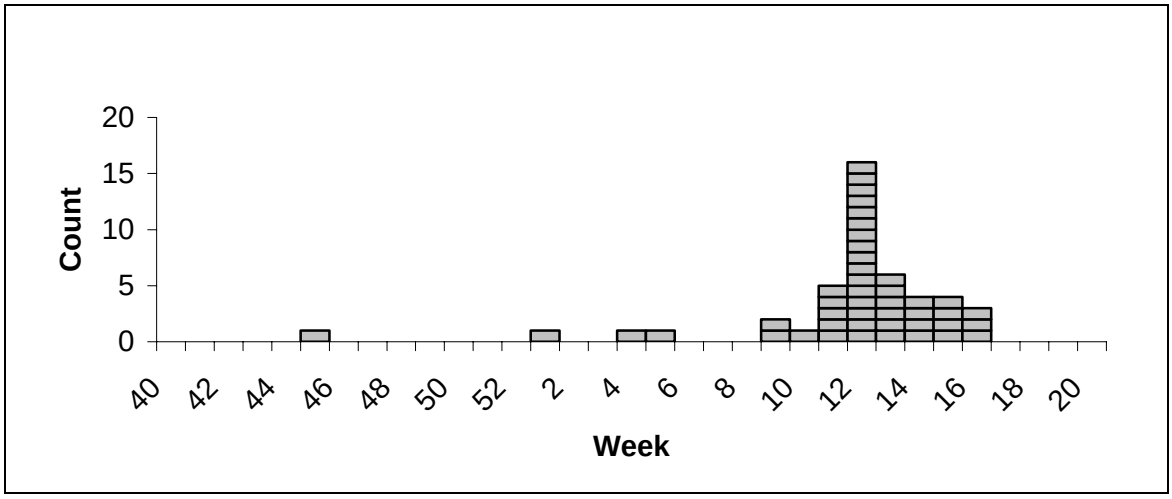
Outbreaks

Outbreaks of influenza or influenza-like illness are notifiable conditions in Maine. The definition used to recognize outbreaks of influenza-like illness varies by setting. Outbreaks of ILI in long-term care facilities, including nursing homes, assisted living facilities, and skilled nursing facilities, are defined as ≥1 patient with laboratory-confirmed influenza or ≥3 patients with ILI on the same floor or ward during a short period (e.g., 48-72 hours) in any facility statewide. Outbreaks of ILI in an acute care facility are defined as ≥1 patient with laboratory-confirmed influenza ≥48 hours after facility admission. An outbreak of ILI in schools, including elementary, middle and high schools, is defined as daily student absenteeism ≥15% that is attributable to ILI. All health care facility and schools are asked to report suspected ILI outbreaks to Maine CDC.

During the 2005-2006 season, there were a total of 45 outbreaks of influenza-like illness reported, including 23 outbreaks in long-term care facilities, 21 in schools, and 1 in an

acute care facility. The attack rate among facilities reporting ILI outbreaks ranged from 0.6% to 56.9% among residents/students, and 0% to 12.5% among staff. The vaccination rate in health care facilities ranged from 83.1% to 100% among residents, and 18.4% to 100% among staff. A total of 22 hospitalizations and 5 deaths were associated with these outbreaks.

Outbreaks of Influenza and Influenza-like Illness by Week Reported Maine, 2005-06



Novel Virus

Guidelines for detecting suspected cases of a novel influenza virus, including influenza A (H5N1) have been issued by the federal CDC. Maine CDC has posted the guidelines on the Maine influenza web site (www.maine.gov/dhhs/boh/influenza_surveillance_avian-info.htm). Patients meeting clinical and epidemiologic criteria suggestive of possible novel influenza virus infection are tested by PCR at HETL.

During the 2005-2006 season, 3 suspect human cases of novel influenza virus were reported. Two of these cases were ruled out based on epidemiologic criteria. One case met both the clinical and epidemiological criteria, in that the case-patient had recently returned from a country with documented avian influenza A (H5N1) infections in humans and poultry, reported contact with poultry, and presented with severe respiratory illness within 10 days of travel. Respiratory specimens collected were negative by PCR for influenza A (H1), (H3), (H5), and influenza B.

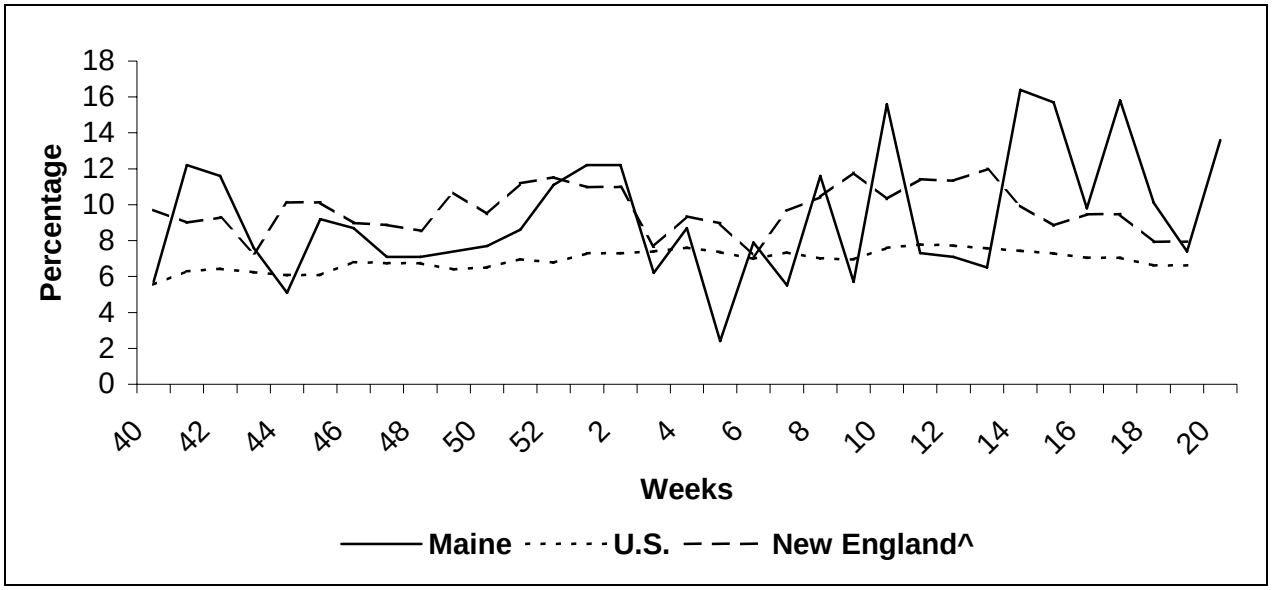
Death Certificates

The vital statistics offices of three Maine cities, Portland, Lewiston and Bangor, report the number of death certificates in which pneumonia and influenza are mentioned as the primary or secondary cause of death by town of occurrence. These data were used to calculate the percentage of deaths attributable to influenza and pneumonia. It is important to note that a death record reported to a vital records office in a specific city is indicative of the place of death and not the actual residence of the deceased.

During the 2005-2006 influenza season, 205 (9.5%) of 2,169 deaths reported by the three city vital records offices were attributable to pneumonia and influenza. Deaths

attributable to pneumonia and influenza peaked during week 14 (April 2-8, 2006) when 16.4% of deaths were pneumonia and influenza-related.

Percentage of Deaths Attributable to Pneumonia and Influenza
Maine and United States, 2005-06



^ NE Region includes the following reporting areas: Boston, MA; Bridgeport, CT; Cambridge, MA; Fall River, MA; Hartford, CT; Lowell, MA; Lynn, MA; New Bedford, MA; New Haven, CT; Providence, RI; Somerville, MA; Springfield, MA; Waterbury, CT; Worcester, MA.

Pediatric Fatalities

Health care providers and the office of the Maine Medical Examiner report deaths in persons aged 18 years or younger associated with laboratory-confirmed influenza to Maine CDC. Each report is investigated to obtain additional demographic and illness-related information. Maine CDC reports influenza-associated pediatric fatalities to the federal Centers for Disease Control and Prevention as part of national surveillance efforts. No influenza-associated pediatric fatalities were reported in Maine during the 2005-06 season.

Summary

Influenza activity peaked later this season compared to previous seasons, as evidenced by a peak in activity observed for ILI-related outpatient visits during week 12, hospital admissions during week 12, laboratory-confirmed influenza during weeks 14 and 15, and influenza and pneumonia-associated deaths during week 14. Surveillance indicators suggest that even with the late onset, influenza activity was widespread throughout Maine. Virologic surveillance showed an early circulation of influenza A followed by

influenza B during late April and early May. A total of 45 outbreaks of influenza were reported this season, compared to 36 last year. Enhanced surveillance for human infection of novel influenza virus resulted in the report of three suspects; all were ruled out through epidemiologic investigation and laboratory testing.

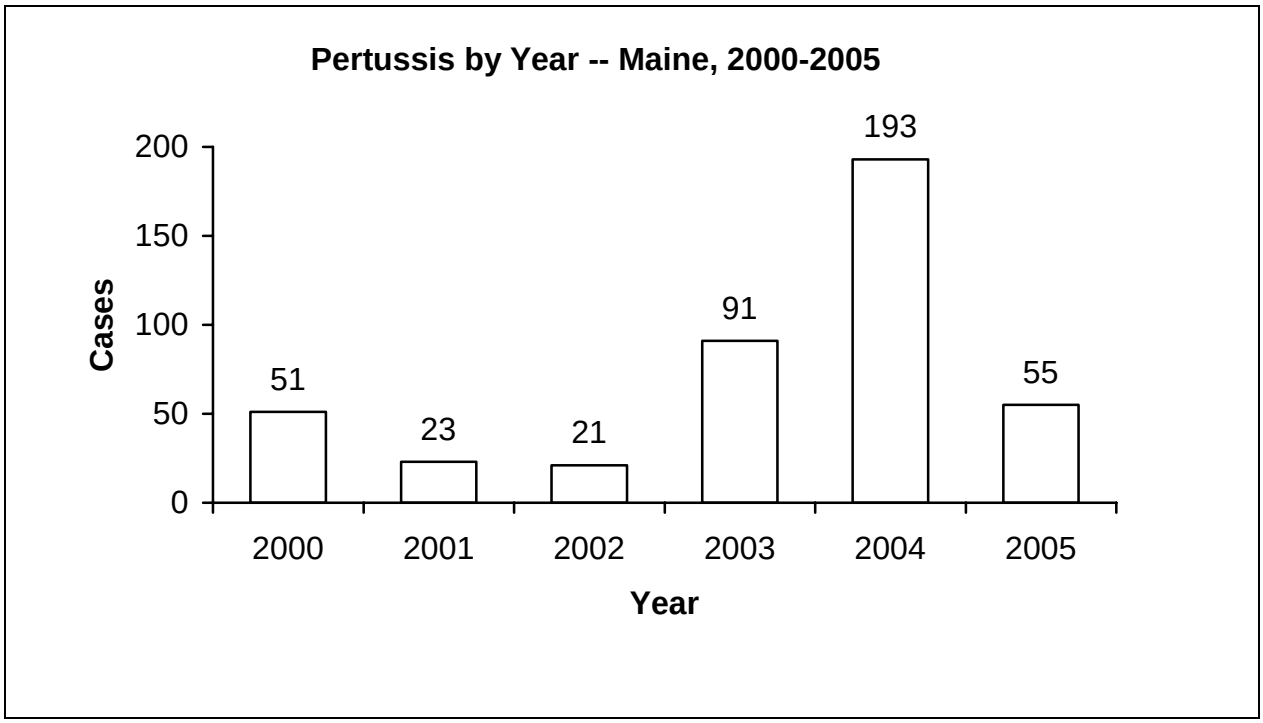
Mumps

Mumps is a systemic viral disease characterized by unilateral or bilateral swelling of the parotid gland with possible involvement of other salivary glands lasting more than two days without other apparent cause. Mumps is transmitted by respiratory droplets from three days before to four days after disease onset. The incubation period is 14-18 days.

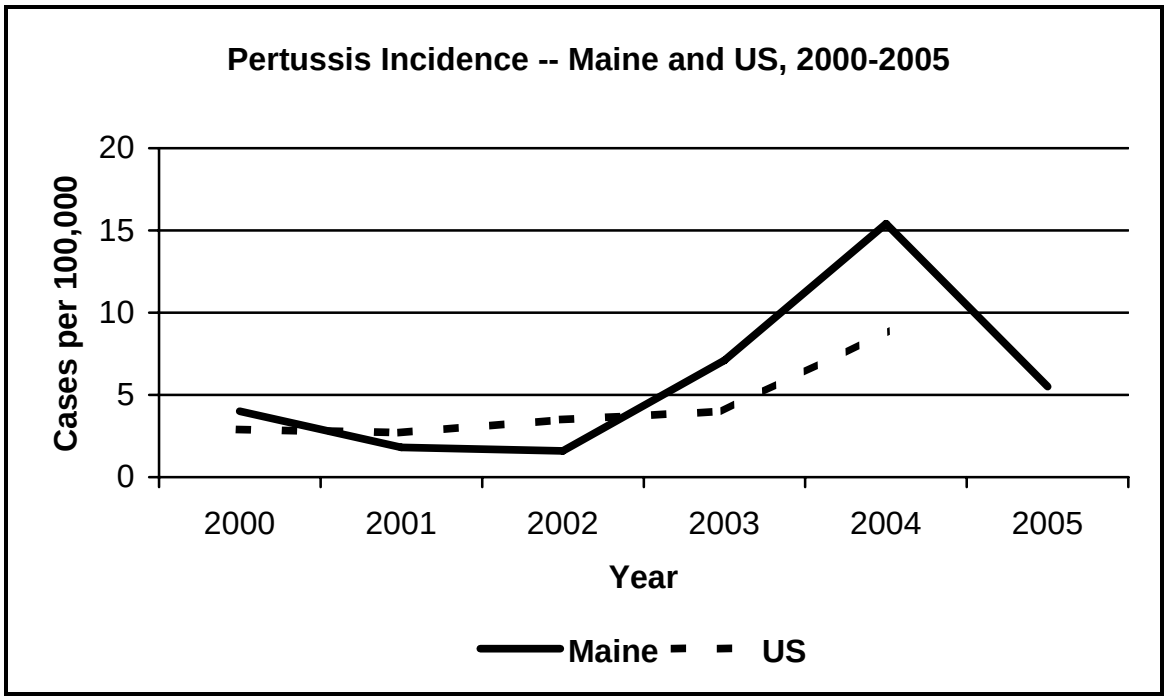
In June and July 2005, the Maine Center for Disease Control and Prevention received reports that two recently arrived individuals from overseas who were at different summer camps in the state had mumps. Both cases were confirmed by testing at the Health and Environmental Testing Laboratory. The two patients were isolated for 12 days, immunization records of campers and staff at each camp were reviewed and vaccination clinics were held. No additional cases were reported.

Pertussis

Pertussis (whooping cough) is an acute bacterial infection of the respiratory tract caused by *Bordetella pertussis*. The disease used to be one of the most common diseases among children and was associated with a high mortality rate prior to vaccine licensure. Disease incidence has declined in the US since the vaccine became widely available in the 1940's. However, since the 1980's, disease incidence has increased gradually. Maine saw its largest increase in reported cases in 2004.



All cases were confirmed as pertussis by the CDC case definition. The crude incidence rate for Maine in 2005 was 5.5 per 100,000.



Geographically, cases were reported from 9 of the 16 counties in the State. Most of the cases were reported from York, Kennebec, and Cumberland Counties.

Pertussis by County – Maine, 2005		
County	**Cases Per 100,000**	**Cases**
Androscoggin	2.8	3
Aroostook	5.5	4
Cumberland	4.0	11
Franklin	0	0
Hancock	7.5	4
Kennebec	9.1	11
Knox	0	0
Lincoln	5.7	2
Oxford	0	0
Penobscot	2.7	4
Piscataquis	0	0
Sagadahoc	0	0
Somerset	0	0
Waldo	2.6	2
Washington	0	0
York	6.9	14
State of Maine	5.5	55

For patients with known age, the age range was from 3 months to 74 years old. Ten percent of cases were children <1 year of age, 25% were children 1-9 years, 38% were persons 10-19 years, and 28% were persons ≥20 years of age.

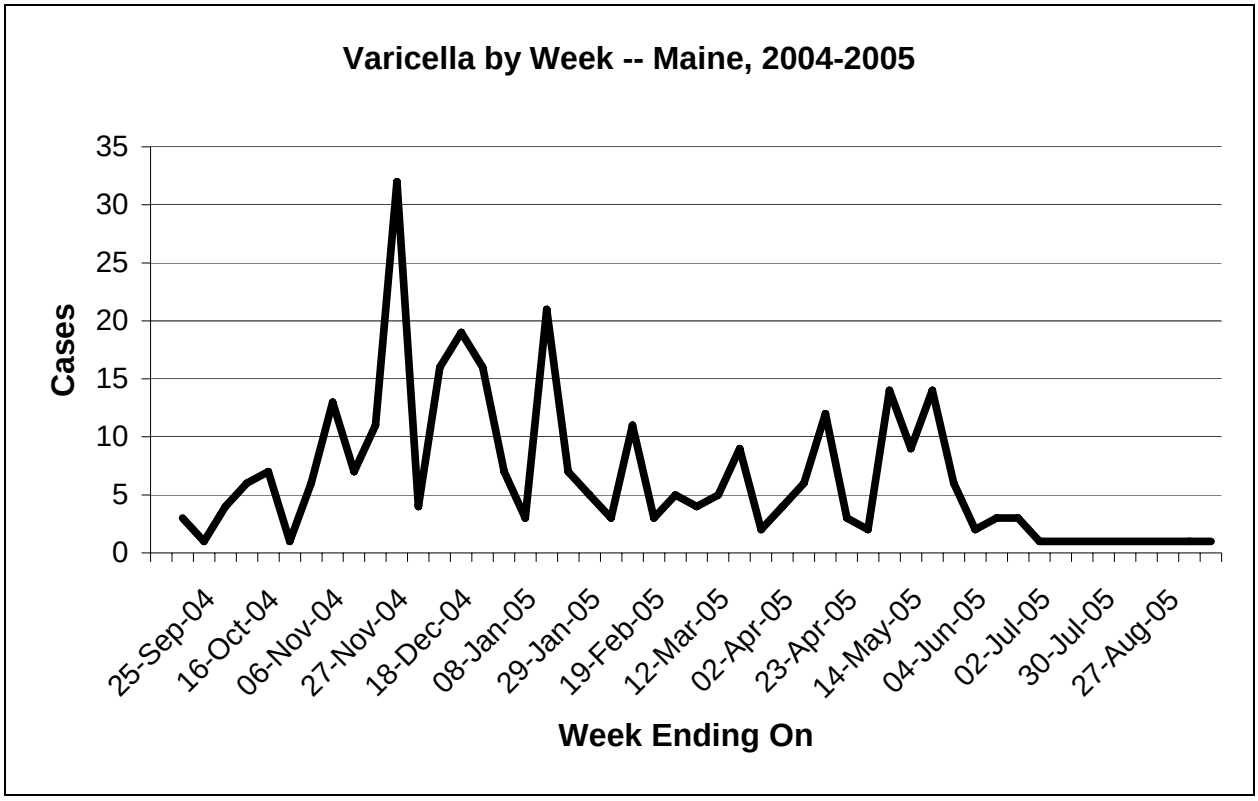
In 2005 two new vaccines (Tdap) containing a pertussis booster, in combination with tetanus and diphtheria, was approved for use. ADACEL by Sanofi-Pasteur is for use in persons 11-64 years of age. Boostrix by GlaxoSmithKline is for use in persons 10-18 years of age.

The Advisory Committee on Immunization Practices recommended Tdap instead of a Td booster for adolescents 11-18 years of age. Once implemented this should result in a reduction in the number of pertussis cases in adolescents. Recommendations for the use of Tdap in adults have not yet been released.

Varicella

Varicella (chickenpox) is a common, acute, highly infectious disease caused by the varicella zoster virus. Even though varicella is usually a mild childhood disease and most children recover without difficulty, varicella can result in serious complications. State law requires all students enrolled in school to be vaccinated with varicella vaccine by the start of school in 2007. The implementation of the law was phased in over several years starting with mandatory immunization of kindergarten and first grade students in 2003-2004. By the 2005-006 school year, grades K-3, 6, 9 and 10 were covered by the immunization requirement.

Cases of varicella declined from 712 in 2002-2003 to 390 in 2003-2004 and to 318 in 2004-2005. No deaths from varicella were reported in 2004-2005.

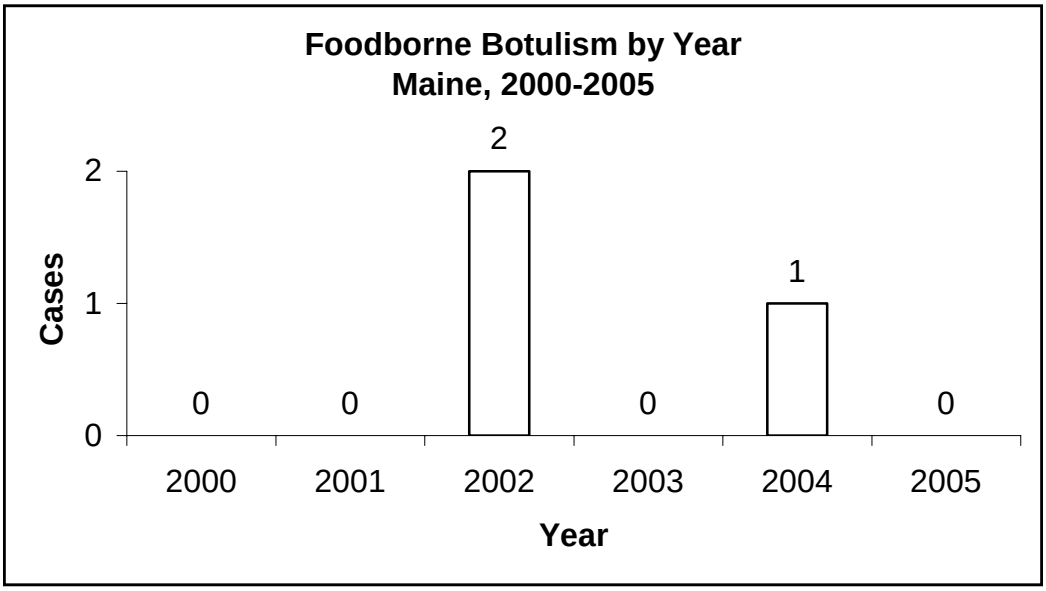


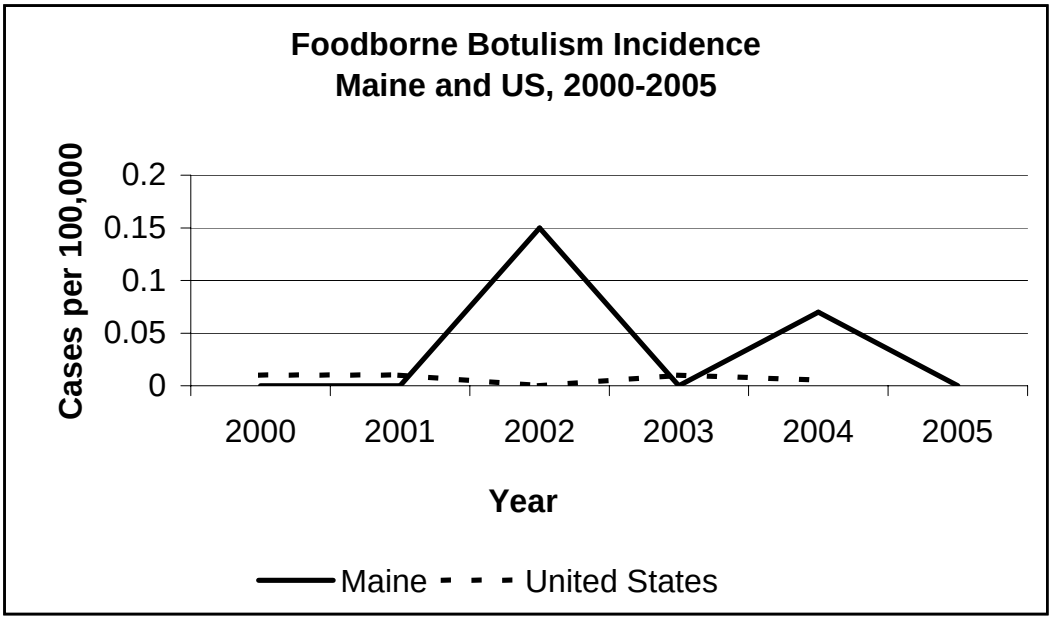
ENTERIC DISEASES

Botulism, Foodborne

Botulism, a rare neuroparalytic illness, is caused by exposure to toxins produced by the bacterium *Clostridium botulinum.* It is classified into three forms: foodborne, wound, and intestinal. Foodborne botulism is characterized by cranial nerve impairment and descending paralysis and is often associated with difficulty in vision and swallowing. Illness results from the ingestion of preformed toxin present in contaminated food. Testing of human and food specimens is conducted at the federal CDC.

No case of human foodborne botulism was reported to the Maine CDC in 2005.





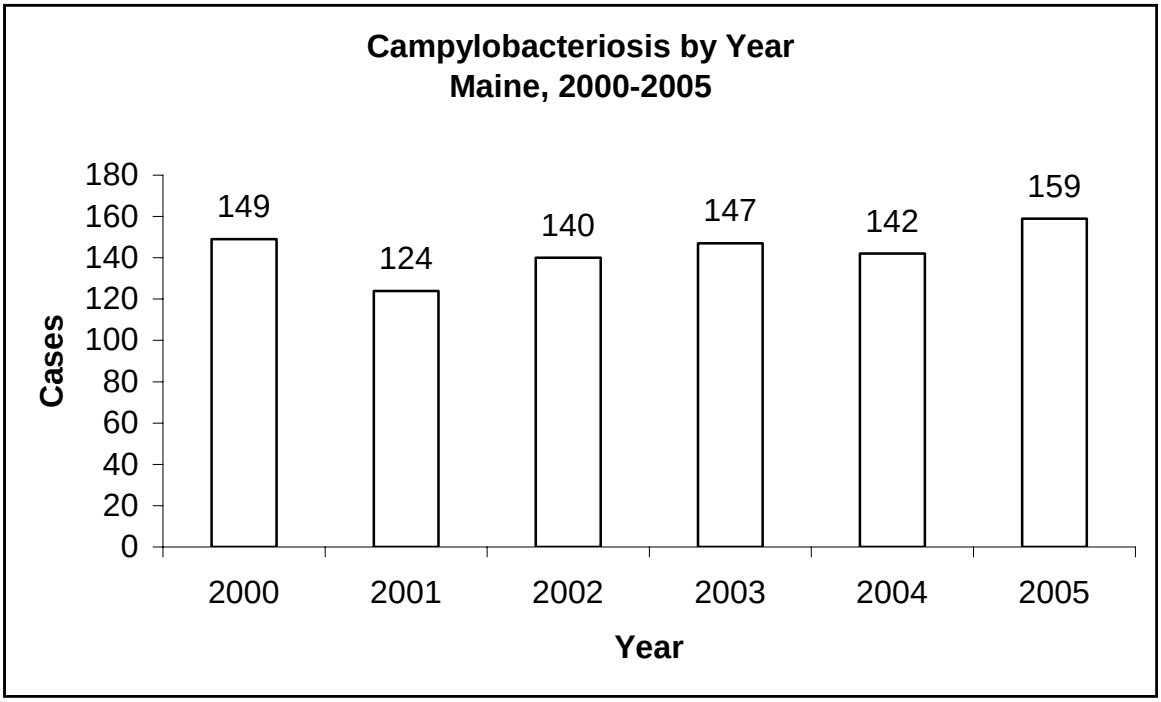
A single case of foodborne botulism requires an intensive investigation of all suspect foods for testing. All suspect foods are disposed of in an effort to prevent further cases from occurring. All close contacts are interviewed to determine common exposures and potential for illness. A definitive cause could not be determined in the 2004 case.

Though rare, foodborne botulism continues to occur in Maine and the United States. The most common cause of this illness is due to home canning of vegetables and fruits. On-going education regarding proper home canning and other food preservation techniques is the most effective public health intervention.

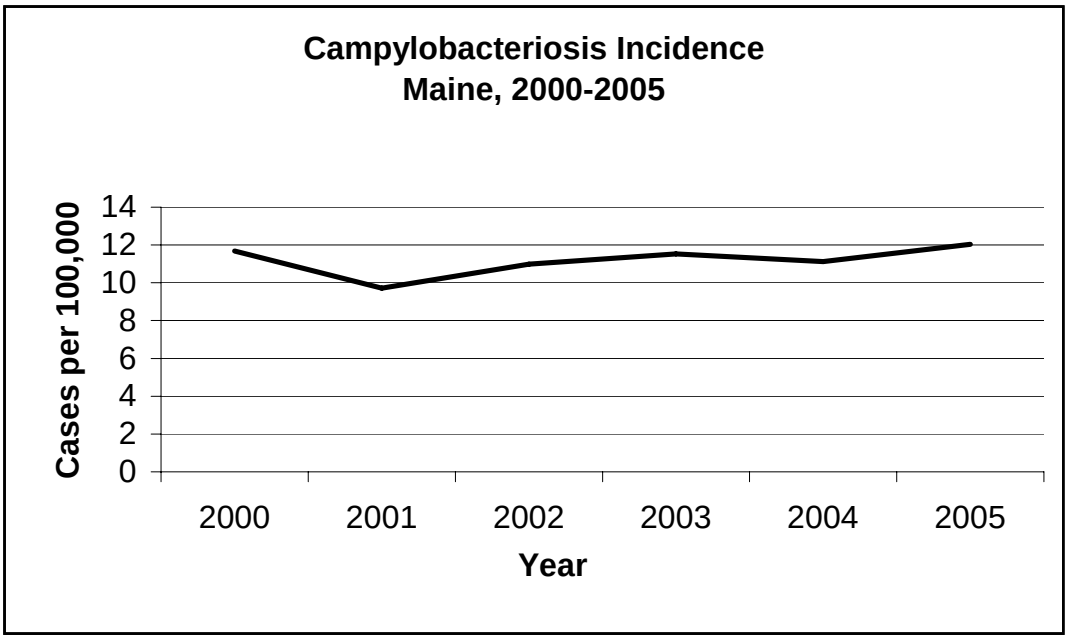
Campylobacteriosis

Campylobacteriosis, one of the most commonly reported gastrointestinal illnesses in the United States and Maine, is an acute zoonotic bacterial enteric disease, most often caused by *Campylobacter jejuni*. It is characterized by diarrhea, abdominal pain, malaise, fever, nausea and vomiting. Although prolonged illness and relapses may occur in adults, the illness typically lasts 2-5 days. The infection is most often associated with handling raw poultry or eating raw or undercooked meat. It is also possible to become ill after ingesting untreated water or unpasteurized milk and juices.

In Maine, there were 159 cases of campylobacteriosis reported in 2005. This is comparable to the number of reports received each year since 2000.



The 5-year median of reported campylobacteriosis cases in Maine was 142. The case rate in 2005 for Maine was 12.0 per 100,000. Campylobacteriosis is not currently a nationally notifiable disease.



Campylobacteriosis was reported in all sixteen Maine counties. Cumberland County accounted for the largest number of cases with 31. The counties of York, Androscoggin, Penobscot, Kennebec, and Lincoln all reported 10 or more cases. Lincoln County had the highest case rate in Maine for campylobacteriosis (28.4 per 100,000).

Campylobacteriosis by County – Maine, 2005		
County	**Cases per 100,000**	**Cases**
Androscoggin	17.6	19
Aroostook	4.1	3
Cumberland	11.3	31
Franklin	6.7	2
Hancock	16.8	9
Kennebec	14.9	18
Knox	7.3	3
Lincoln	28.4	10
Oxford	7.1	4
Penobscot	12.2	18
Piscataquis	5.7	1
Sagadahoc	2.7	1
Somerset	17.4	9
Waldo	5.2	2
Washington	6.0	2
York	13.3	27
State of Maine	12.0	159

The age range of cases with campylobacteriosis was 9 months to 88 years; one case did not have an age identified. The median age was 46. Infants under the age of 5 years

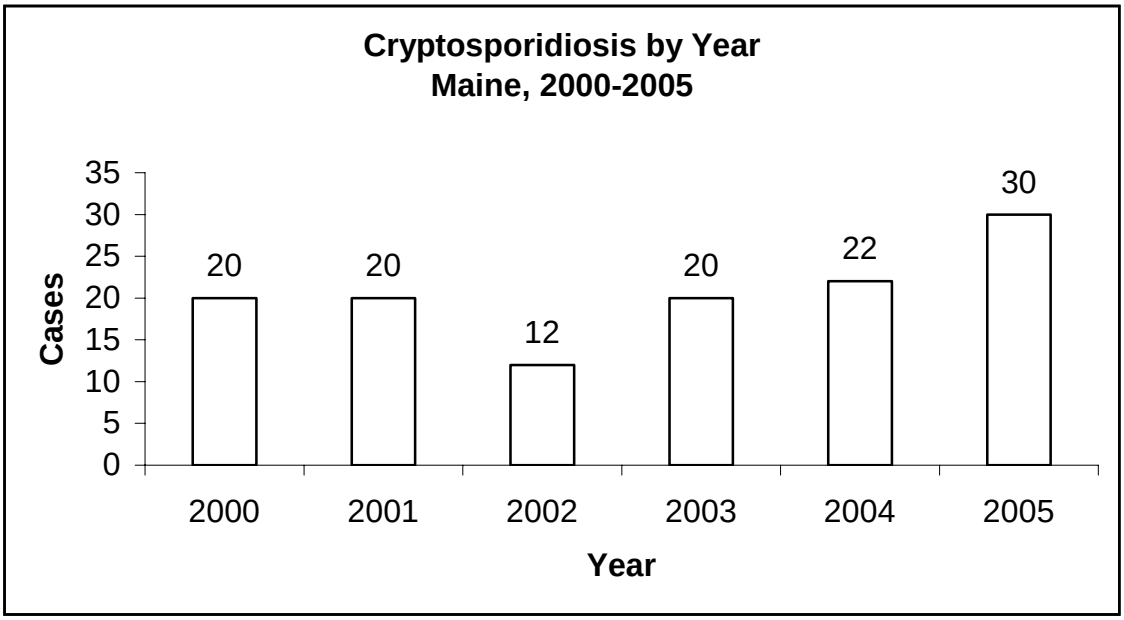
accounted for just over 1% of cases, children 5-14 years old 3%, youths 15-24 years old 13%, adults 25-39 years old 18%, adults 40-64 years old 50%, and adults over 65 accounted for 14% of cases. Fifty-five percent of persons with campylobacteriosis were male. One case did not have a gender identified. The incidence of campylobacteriosis peaked in June and July.

Education regarding the proper cooking of poultry and other meat and the need to avoid drinking untreated water and unpasteurized milk or juice may decrease the incidence of campylobacteriosis.

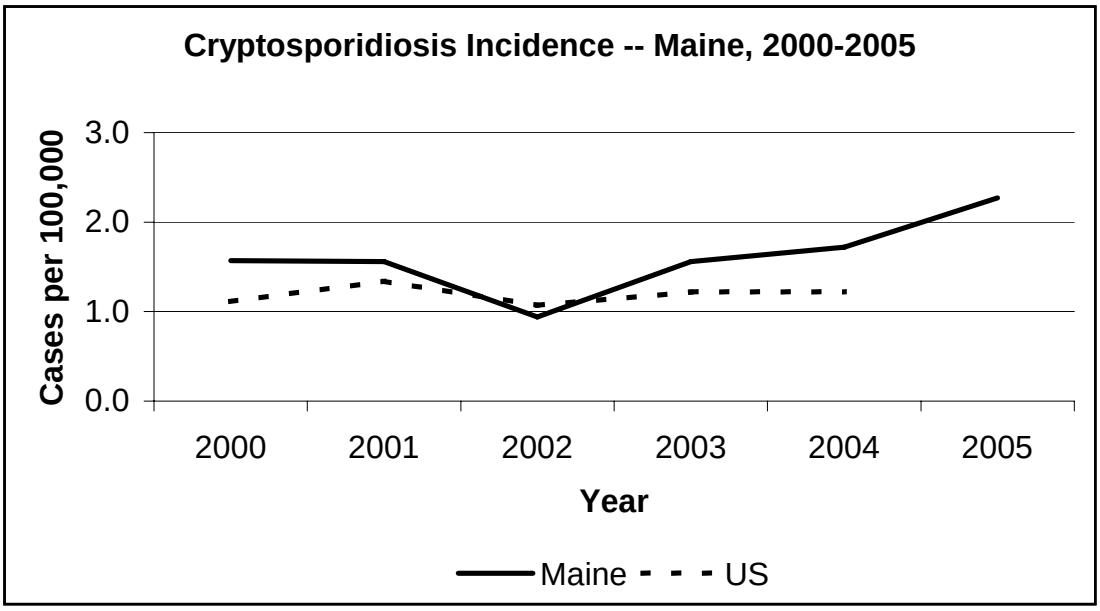
Cryptosporidiosis

Cryptosporidiosis is a parasitic infection caused by *Cryptosporidium parvum.* The infection is transmitted by fecal-oral contact including person-person, animal-person, foodborne, or waterborne transmission. The incubation period is usually 7 days, though may be as long as 12 days.

There were 30 cases of cryptosporidiosis reported in Maine in 2005. Compared to the average number of cases from the previous five years, this represents a significant increase in the number of cases reported to the Maine CDC.



The 5-year median of reported cryptosporidiosis cases in Maine was 20. The case rate in 2005 for Maine was 2.3 per 100,000 while the United States case rate (2004) was 1.3.



Hancock and Lincoln counties had the largest number of cases with five each. Four counties reported three cases (Aroostook, Franklin, Kennebec, and York). All other counties reported ≤2 cases. The county with the highest case rate was Lincoln County (14.2 per 100,000).

Cryptosporidiosis by County – Maine, 2005		
County	**Cases per 100,000**	**Cases**
Androscoggin	0.9	1
Aroostook	4.1	3
Cumberland	0.7	2
Franklin	10.1	3
Hancock	9.3	5
Kennebec	2.5	3
Knox	2.4	1
Lincoln	14.2	5
Oxford	0	0
Penobscot	1.4	2
Piscataquis	5.7	1
Sagadahoc	0	0
Somerset	0	0
Waldo	2.6	1
Washington	0	0
York	1.5	3
State of Maine	2.3	30

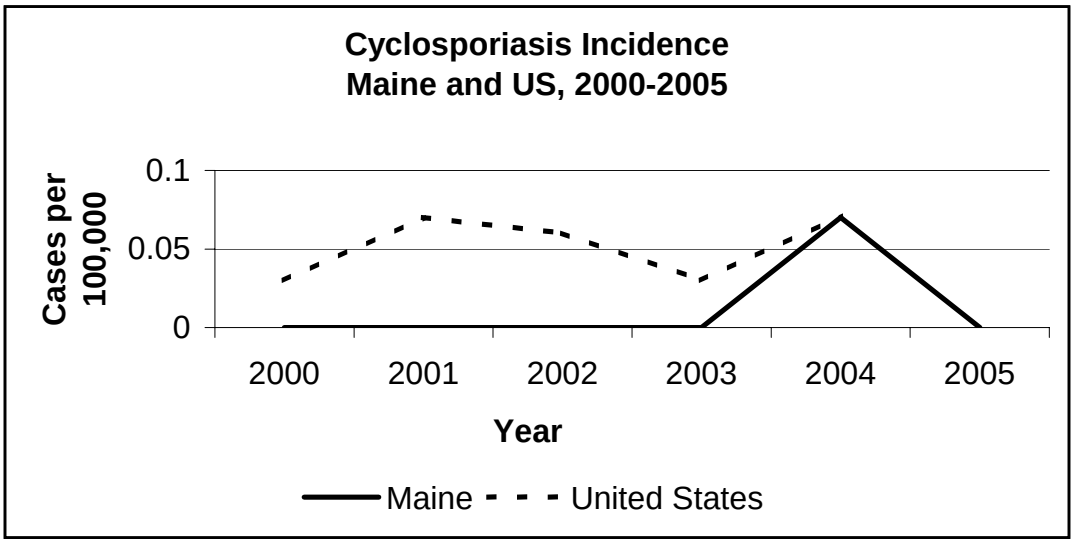
The age range for cases of cryptosporidiosis was 1 to 69 years. The median age was 33. Infants under five years made up 13% of cases, children 5-14 years 20% of cases,

youths 15-24 years 13% of cases, adults 25-39 years 7% of cases, adults 40-64 years 40% of cases, and adults 65 years and older 7% of cases. Females accounted for 53% of the cases. There did not appear to be any seasonal trend for this disease. Cases were distributed evenly throughout the year.

Cyclosporiasis

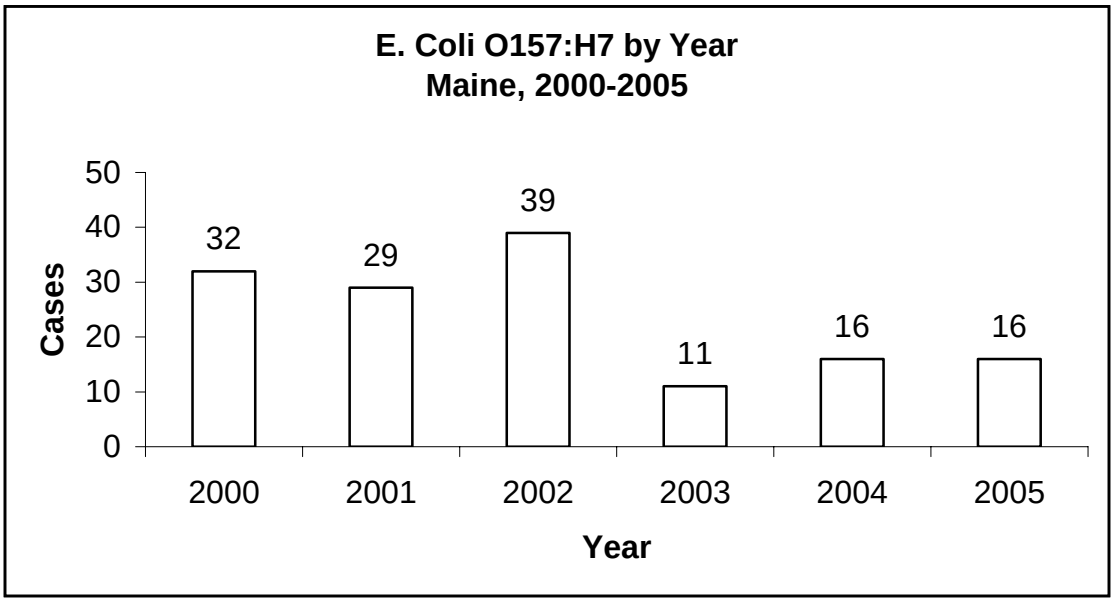
Cyclosporiasis is caused by a protozoan, *Cyclospora cayetanensis.* Illness is characterized by watery diarrhea, nausea, abdominal cramps and weight loss. Transmission is through contamination of drinking water, fresh fruits or vegetables.

In 2005, there was no case of cyclosporiasis reported to the Maine CDC. Since 2000, there was one case of cyclosporiasis reported in Maine in 2004.

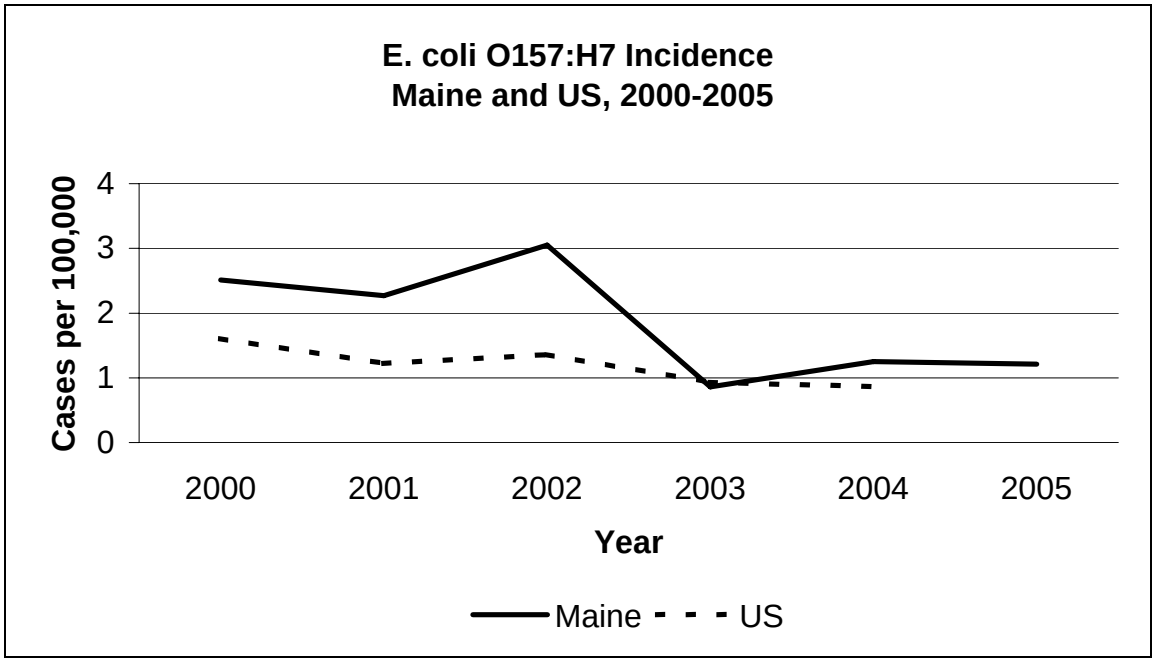


Enterohemorrhagic *Escherichia coli* 0157:H7

Escherichia coli O157:H7 is the most common strain of enterohemorrhagic *Escherichia coli* in Maine with 16 cases reported in 2005. Nationally, this strain has been associated with undercooked ground beef, unpasteurized juice and milk, and produce. Direct person-to-person transmission may occur from close contact in families and day care centers.



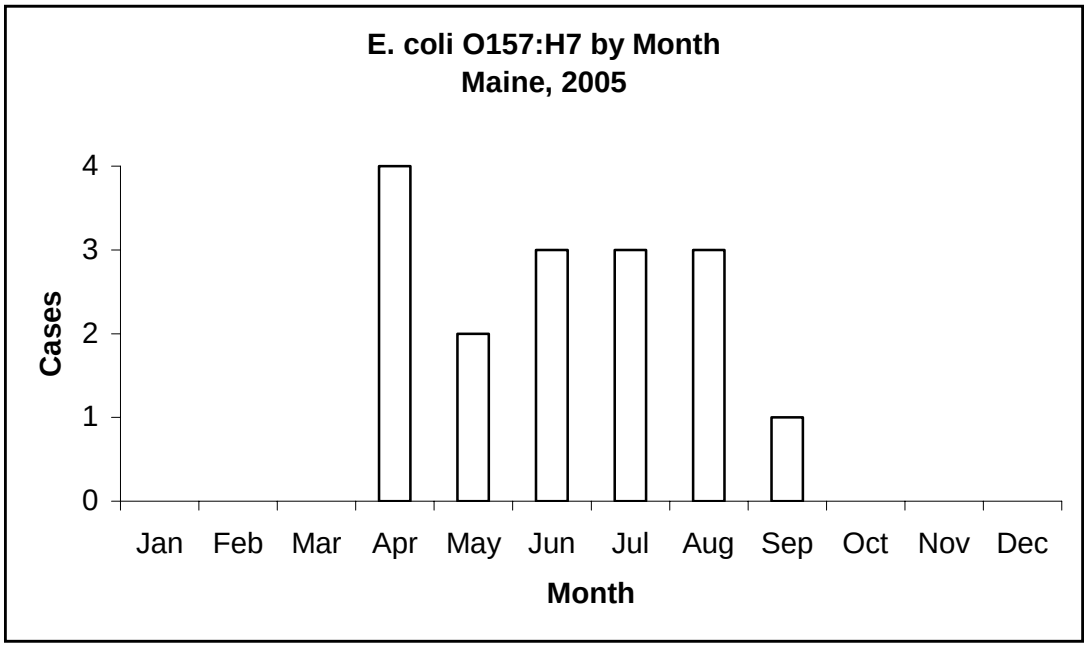
The 5-year median of reported *E. coli* 0157:H7 cases in Maine was 16. The case rate in 2005 for Maine was 1.2 per 100,000 while the United States rate (2004) was 0.9 per 100,000.



Cumberland and Androscoggin counties accounted for the largest number of cases with three cases each. Oxford, Penobscot and York counties reported two cases each. All other counties had 1 case or less. The county with the highest case rate was Somerset County (3.9 per 100,000).

E. coli O157:H7 by County -- Maine, 2005		
County	**Cases per 100,000**	**Cases**
Androscoggin	2.8	3
Aroostook	0	0
Cumberland	1.1	3
Franklin	0	0
Hancock	1.9	1
Kennebec	0.8	1
Knox	0	0
Lincoln	0	0
Oxford	3.5	2
Penobscot	1.4	2
Piscataquis	0	0
Sagadahoc	0	0
Somerset	3.9	2
Waldo	0	0
Washington	3.0	1
York	0.5	1
State of Maine	1.2	16

The age range for cases was from 4 to 91 years. The median age was 22 years. Thirty-one percent of the cases were under the age of 15 years. Forty-four percent were 40 years or older. The ratio of male to female cases was 1 to 1. All of the cases occurred during the period from April through September.



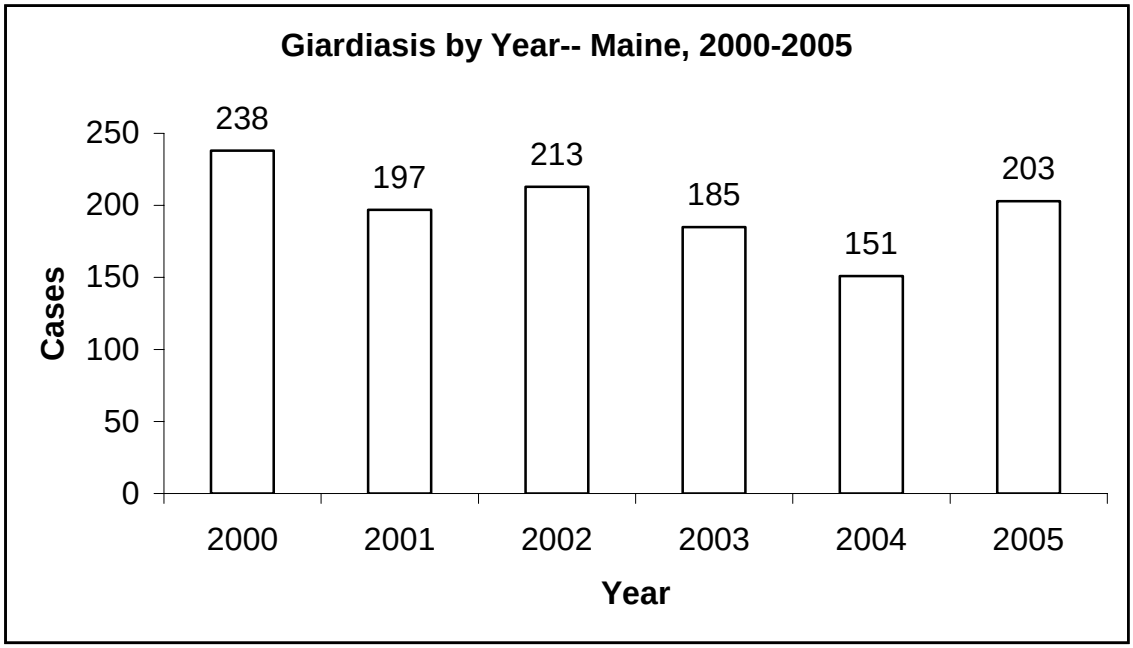
All cases of *E. coli* O157:H7 are immediately investigated to determine a common source of infection. Pulse Field Gel Electrophoresis was used to determine common

molecular patterns among cases. If matching patterns were identified an investigation was extended to further determine epidemiological links that could lead to a common exposure.

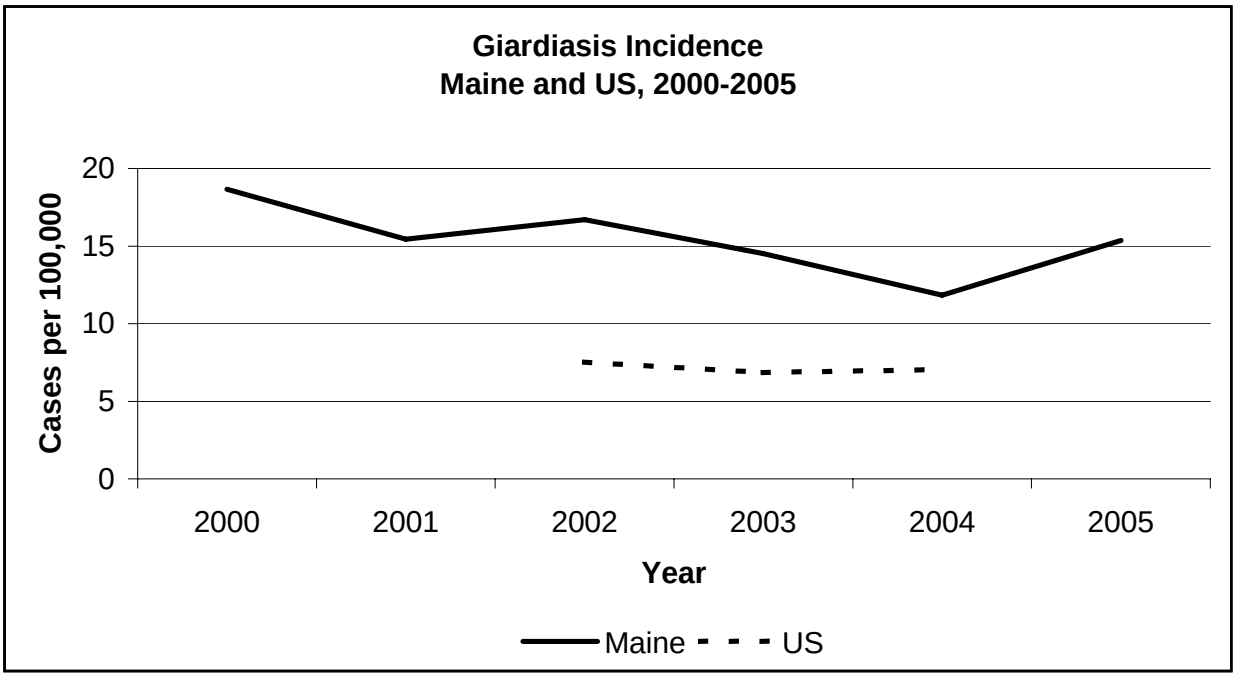
Giardiasis

Giardiasis is caused by a protozoan, G*iardia lamblia.* The illness is most often associated with drinking unfiltered water.

Two hundred and three cases of giardiasis were reported in Maine during 2005.



The 5-year median of reported giardiasis cases in Maine was 197. The case rate in 2005 for Maine was 15.4 per 100,000 while the United States rate (2004) was 7.3 per 100,000.

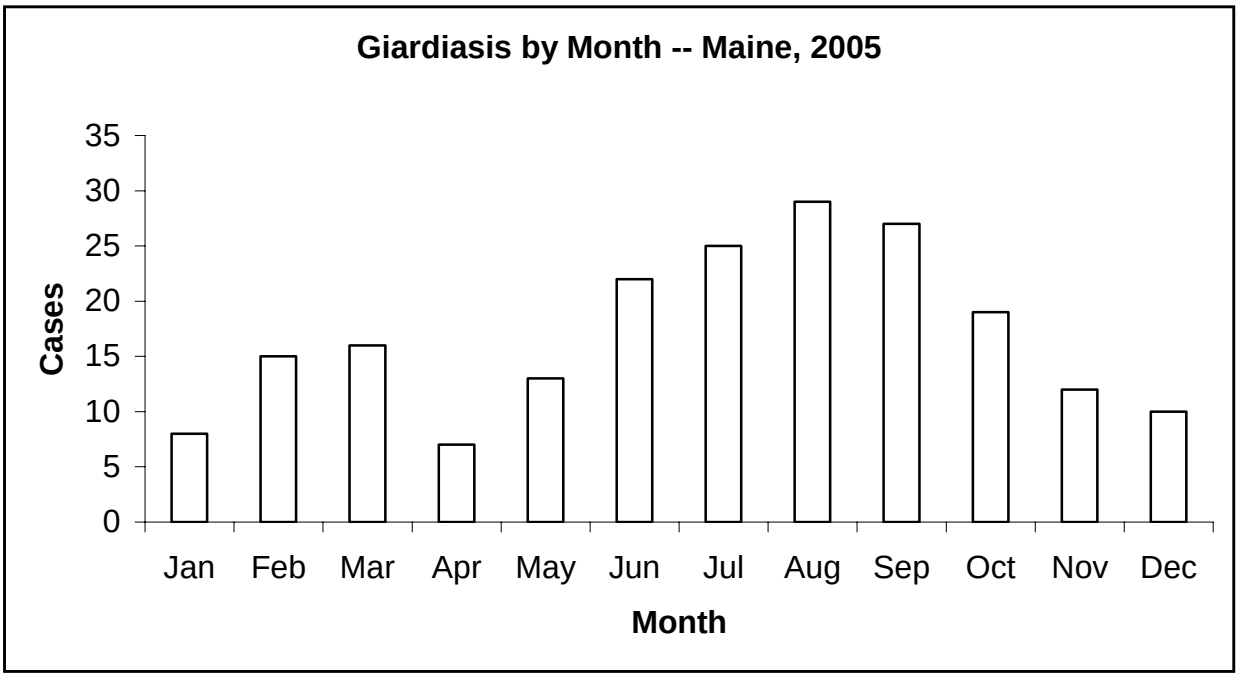


Thirteen counties reported at least five cases of giardiasis. Cumberland County had the greatest number with 42. Somerset County had the highest case rate (29.0 per 100,000).

Giardiasis by County – Maine, 2005		
County	**Cases per 100,000**	**Cases**
Androscoggin	15.7	17
Aroostook	4.1	3
Cumberland	15.3	42
Franklin	20.2	6
Hancock	26.1	14
Kennebec	20.7	25
Knox	17.0	7
Lincoln	14.2	5
Oxford	15.9	9
Penobscot	12.2	18
Piscataquis	0	0
Sagadahoc	16.2	6
Somerset	29.0	15
Waldo	18.1	7
Washington	0	0
York	14.3	29
State of Maine	15.4	203

The age range of giardiasis cases was 9 months to 88 years. The median age was 35 years. Children less than five years made up 16% of the cases, children 5-14 years 8%,

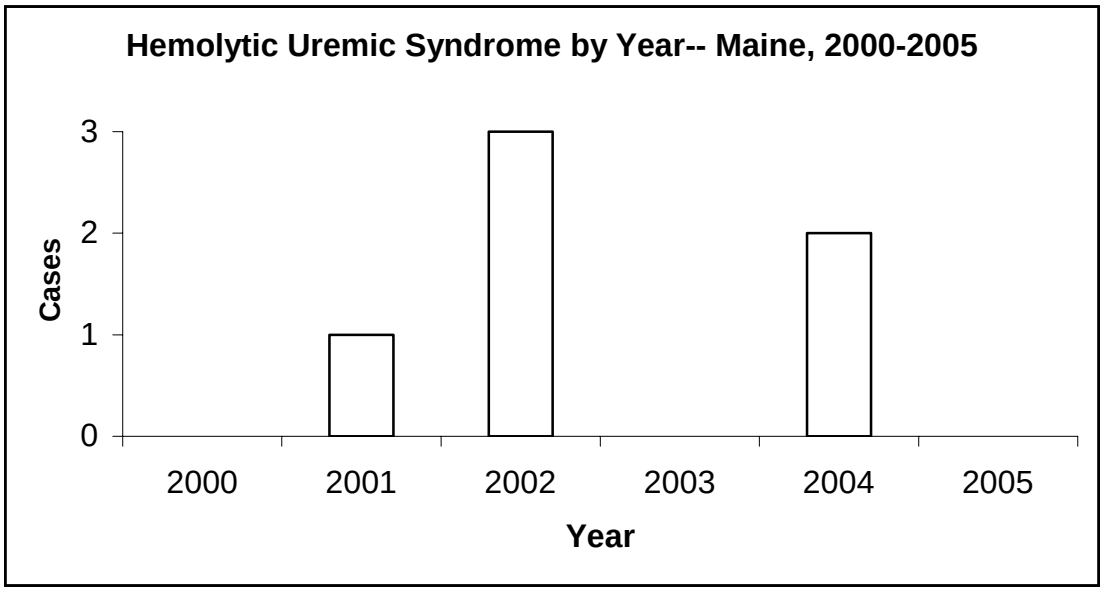
youths 15-24 years 9%, adults 25-39 years 22%, adults 40-64 years 32%, and adults 65 years and older 11% of cases. Fifty-two percent of cases were male. Giardiasis was reported throughout the year with a moderate peak in August.

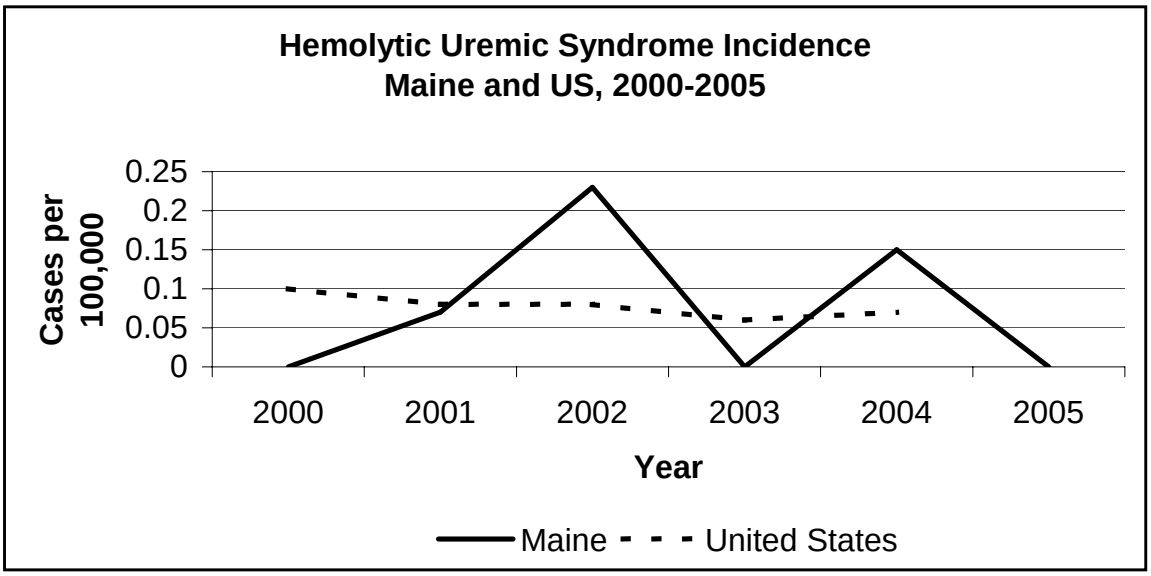


Hemolytic Uremic Syndrome (HUS)

The Hemolytic Uremic Syndrome reported in Maine is post-diarrhea, most often associated with an enterohemorrhagic *E. coli.*

There were no cases of HUS reported in 2005.

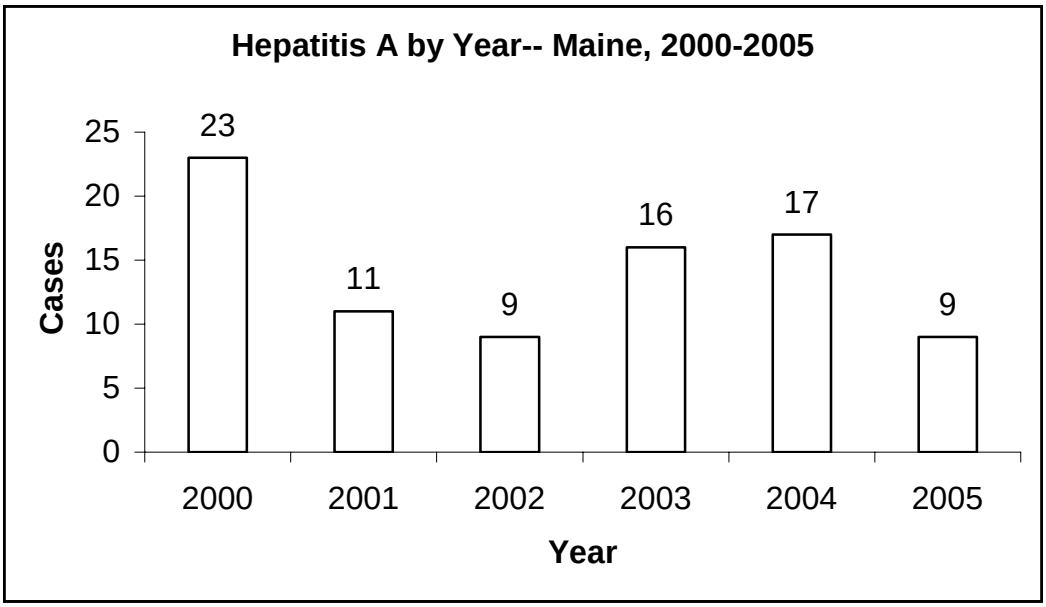




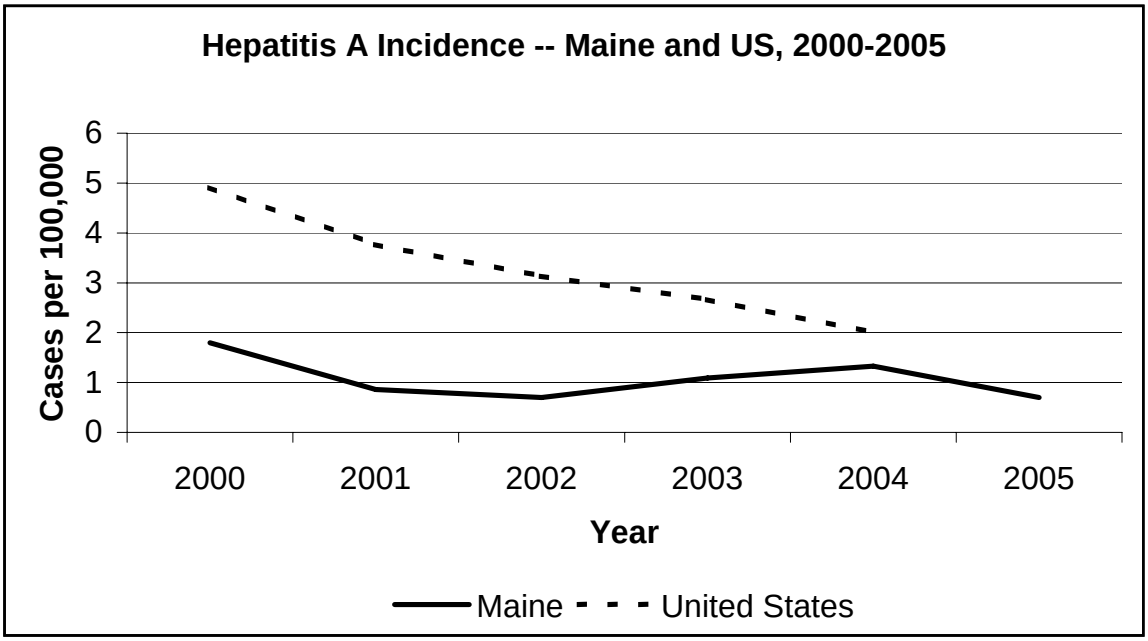
Control of HUS depends on the prompt suspicion and diagnosis of an enterohemorrhagic pathogen so prevention measures may be implemented as soon as possible.

Hepatitis A

Hepatitis A is transmitted person-to-person by the fecal-oral route. Though children may often be asymptomatic, adults show a variety of symptoms including fever, anorexia, diarrhea, and jaundice. During 2005, 9 cases of hepatitis A were reported in Maine.



The 5-year median of reported hepatitis A cases in Maine was 11. The case rate in 2005 for Maine was 0.7 per 100,000 while the national case rate (2004) was 2.0 per 100,000.



Cumberland County had the largest number of reported cases with three. Androscoggin reported two cases while Kennebec, Oxford, Penobscot and York reported one case each.

Hepatitis A by County – Maine, 2005		
County	**Cases per 100,000**	**Cases**
Androscoggin	1.9	2
Aroostook	0	0
Cumberland	1.1	3
Franklin	0	0
Hancock	0	0
Kennebec	0.8	1
Knox	0	0
Lincoln	0	0
Oxford	1.8	1
Penobscot	0.7	1
Piscataquis	0	0
Sagadahoc	0	0
Somerset	0	0
Waldo	0	0
Washington	0	0
York	0.5	1
State of Maine	0.7	9

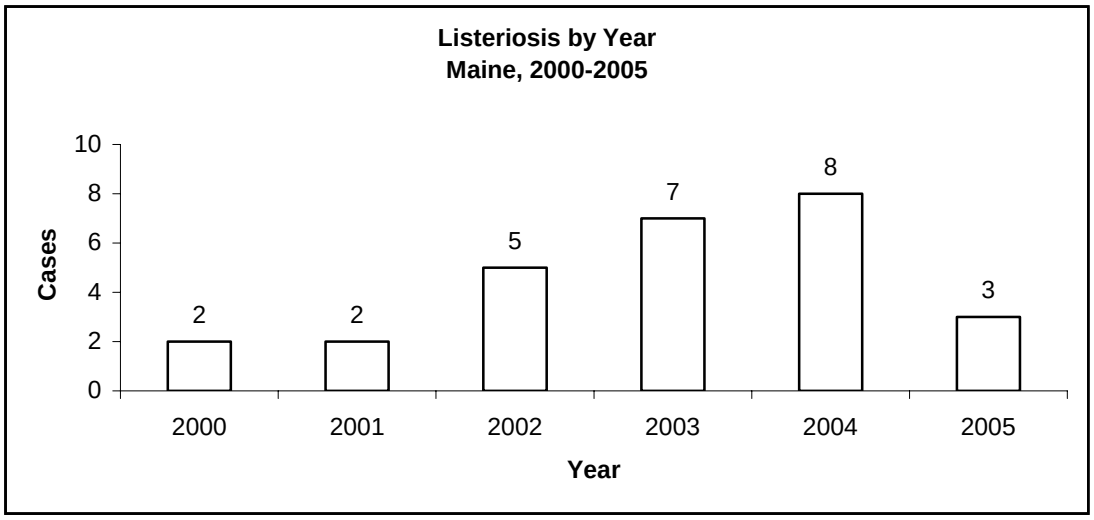
The age range of hepatitis A was 2 to 72 years. Children under 5 year accounted for 11% of cases, youth 15-24 years 33% of cases, adults 25-39 years 22% of cases, and adults 65 years and older 33% of cases. There were no cases in other age groups (i.e., 5-14 years and 40-64 years). Fifty-six percent of cases were male.

Each case of hepatitis A is immediately investigated. Household and close contacts are referred for prophylactic immune globulin. In about 50% of cases it is not possible to determine the source of infection. Further control measures may be implemented if a case is involved in a high-risk occupation such as food handling, day care, or health care.

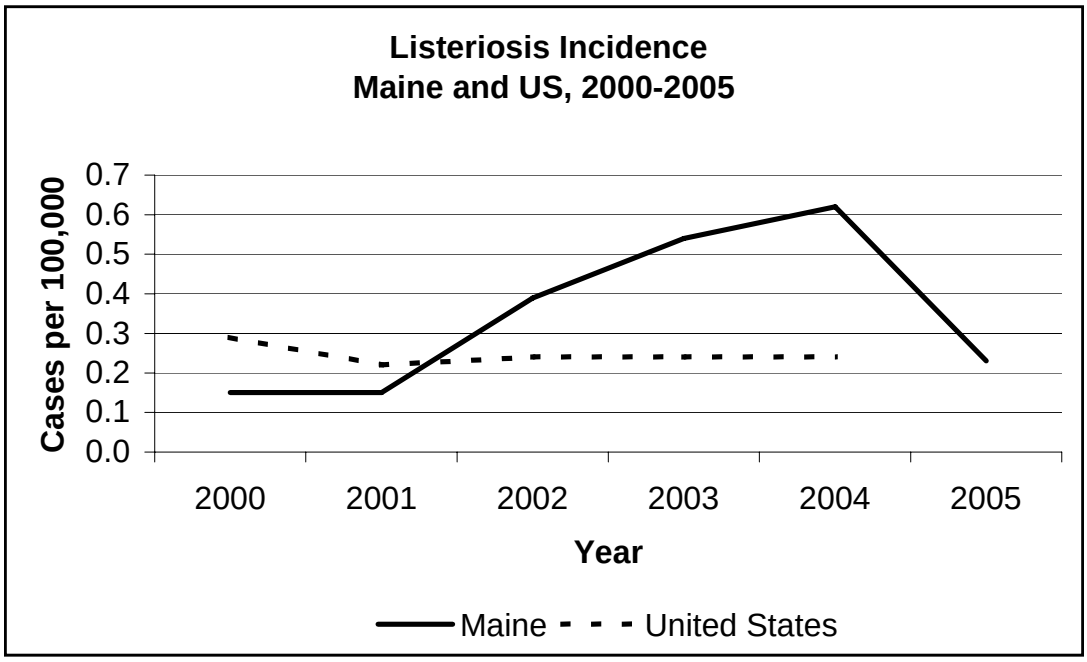
Listeriosis

Listeriosis is a bacterial disease caused by *Listeria monocytogenes.* It has been most frequently linked to ready-to-eat meats, soft cheeses, and raw milk. Pregnant women are most at risk as the infection can be passed on to the fetus.

During 2005, there were 3 cases of listeriosis reported in Maine.



The 5-year median of reported listeriosis cases in Maine was 5. The case rate in 2005 for Maine was 0.2 per 100,000 while the national case rate (2004) was 0.2 per 100,000.



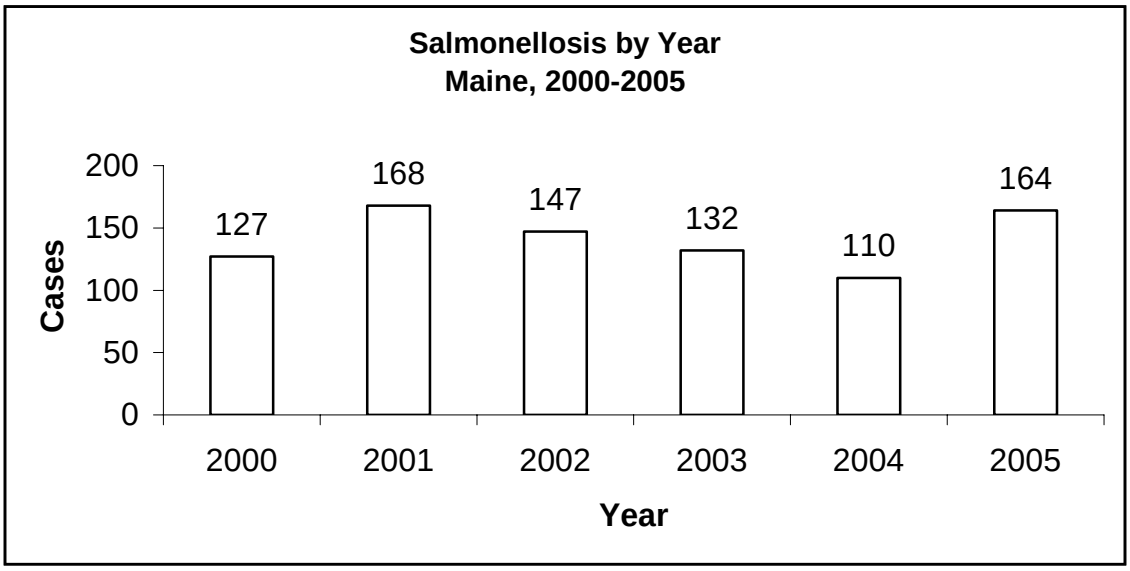
One case each was reported from Androscoggin, Oxford and York counties.

Listeriosis by County -- Maine, 2005		
County	**Cases per 100,000**	**Cases**
Androscoggin	0.9	1
Aroostook	0	0
Cumberland	0	0
Franklin	0	0
Hancock	0	0
Kennebec	0	0
Knox	0	0
Lincoln	0	0
Oxford	1.8	1
Penobscot	0	0
Piscataquis	0	0
Sagadahoc	0	0
Somerset	0	0
Waldo	0	0
Washington	0	0
York	0.5	1
State of Maine	0.2	3

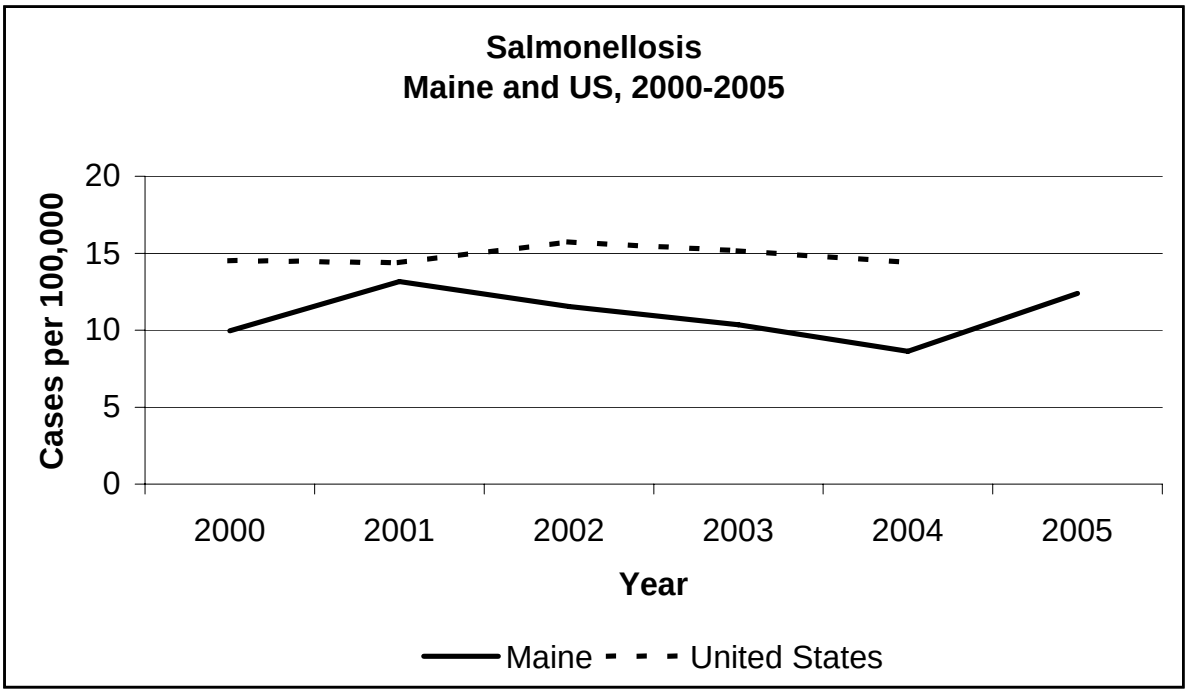
Cases occurred in an infant (73 days old) and two seniors (81 and 84 years old). Two of the three cases were female.

Salmonellosis

Salmonellosis is one of the more frequent enteric diseases reported in Maine. During 2005, 164 cases of salmonellosis were reported to the Maine CDC. The number of confirmed salmonella cases declined from 2001 to 2004, but increased in 2005.



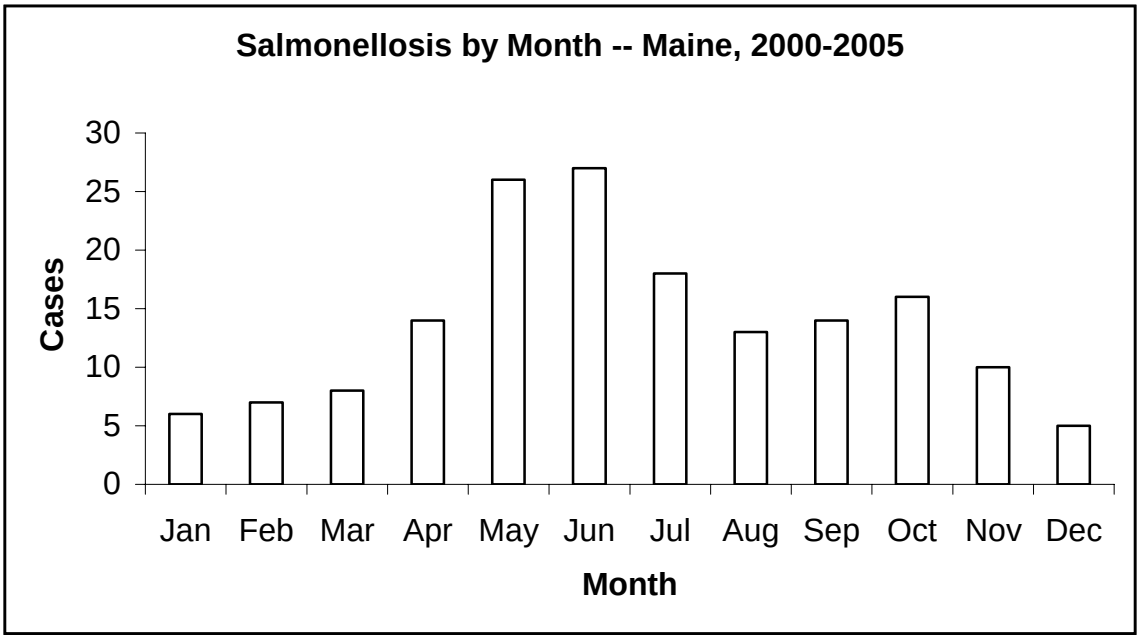
The 5-year median of reported salmonellosis cases in Maine was 147. The case rate in 2005 for Maine was 12.4 per 100,000; the national case rate (2004) was 14.4.



Fifteen counties reported at least one case of salmonellosis. Cumberland County had the largest number of cases with 48 as well as the highest case rate (17.5 per 100,000).

Salmonellosis by County – Maine, 2005		
County	**Cases per 100,000**	**Cases**
Androscoggin	9.3	10
Aroostook	13.7	10
Cumberland	17.5	48
Waldo	6.7	2
Hancock	11.2	6
Kennebec	16.5	20
Knox	4.9	2
Lincoln	17.0	6
Oxford	7.1	4
Penobscot	7.5	11
Piscataquis	0	0
Sagadahoc	10.8	4
Somerset	5.8	3
Waldo	15.5	6
Washington	6.0	2
York	14.8	30
State of Maine	12.4	164

The age range of salmonellosis cases in Maine was 5 months to 92 years. Children under the age of five accounted for 12% of cases, children age 5-14 years 13%, youths 15-24 years 18%, adults 25-39 years 17%, adults 40-64 years 25%, and adults 65 years and older 15% of cases. The median age was 31 years. Fifty-seven percent of cases were female. Most salmonellosis cases occurred between April and October.



Maine identified nine clusters of salmonellosis during 2005 through Pulse-Field Gel Electrophoresis matching and routine investigations. The number of cases linked to these clusters represented 15% (24/164) of reported cases.

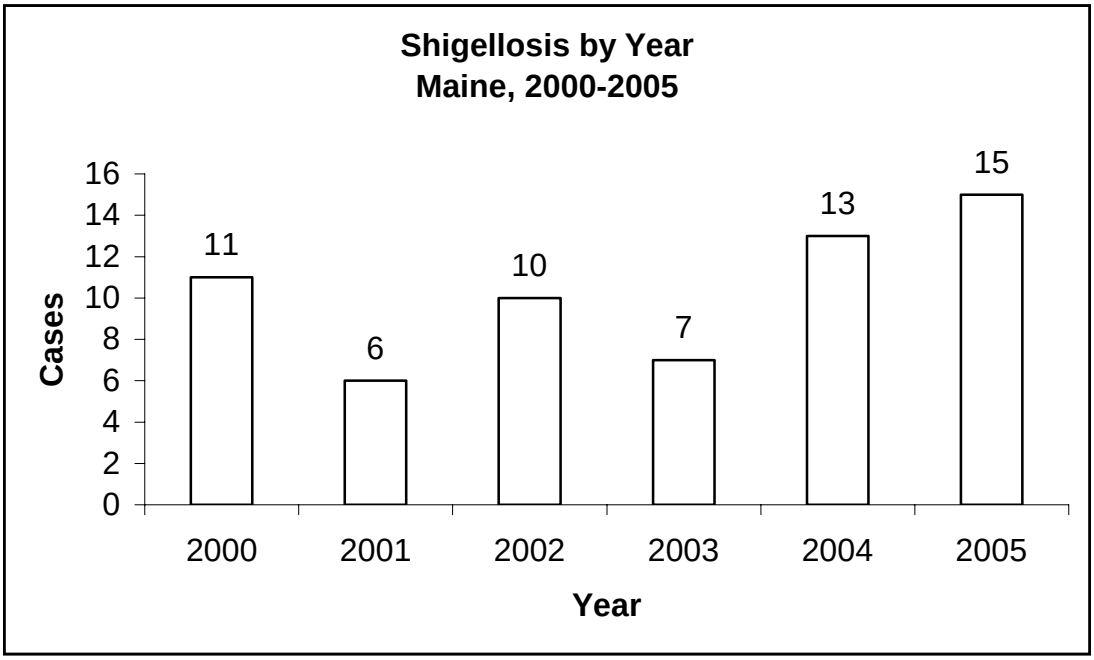
One of the clusters involved *Salmonella kingabwa*, first isolated in 1953 in the Democratic Republic of Congo. The molecular pattern identified with this cluster is rare in the United States. As of December 2005, only six matches had been posted to PulseNet, with two from Maine and the remainder from California, Idaho, Arizona, and Ohio. Epidemiological evidence suggested that contact with reptiles may have been the source of infection.

Maine also participated in a national case-control study involving an outbreak of *Salmonella typhimirium* that was found to be associated with unpasteurized orange juice. The findings from this study led to a voluntary recall of the product.

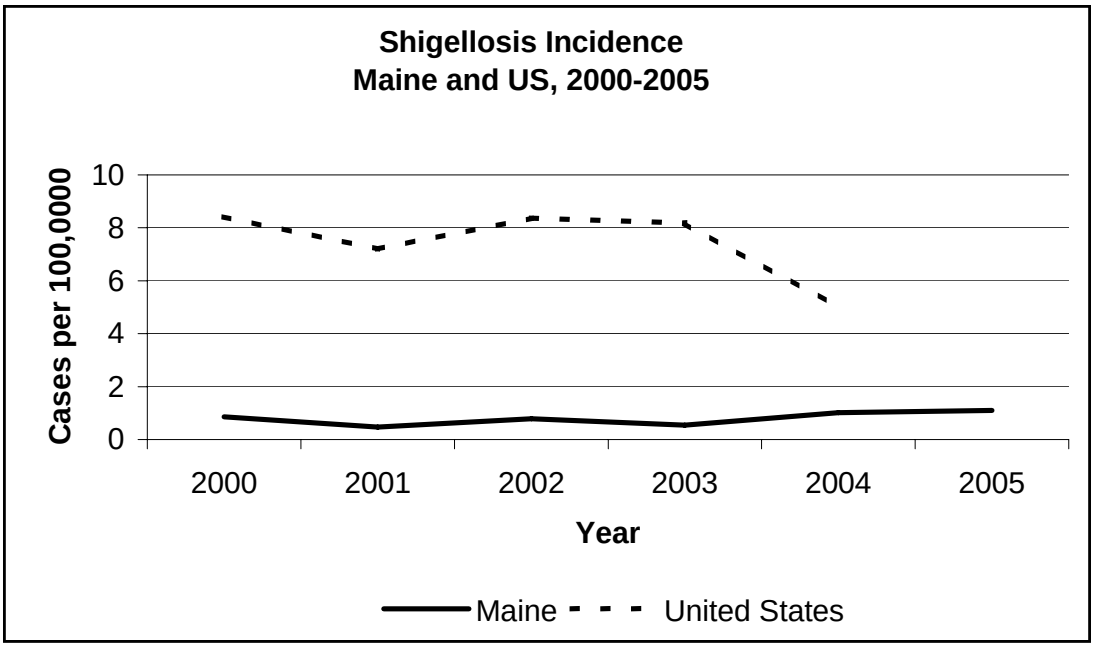
All cases of salmonellosis are investigated as to potential source of infection. Pulse Field Gel Electrophoresis is performed on all isolates to determine common molecular patterns and possible outbreaks not identified through case interviews. Such laboratory information supports ongoing epidemiologic investigations in establishing common sources of infection.

Shigellosis

Shigellosis is an uncommon bacterial pathogen in Maine, most often seen in individuals who have traveled outside of the country. There were 15 cases of shigellosis reported in Maine during 2005.



The 5-year median of reported shigellosis cases in Maine was 10. The case rate in 2005 for Maine was 1.1 per 100,000 while the national case rate (2004) was 5.0 per 100,000.

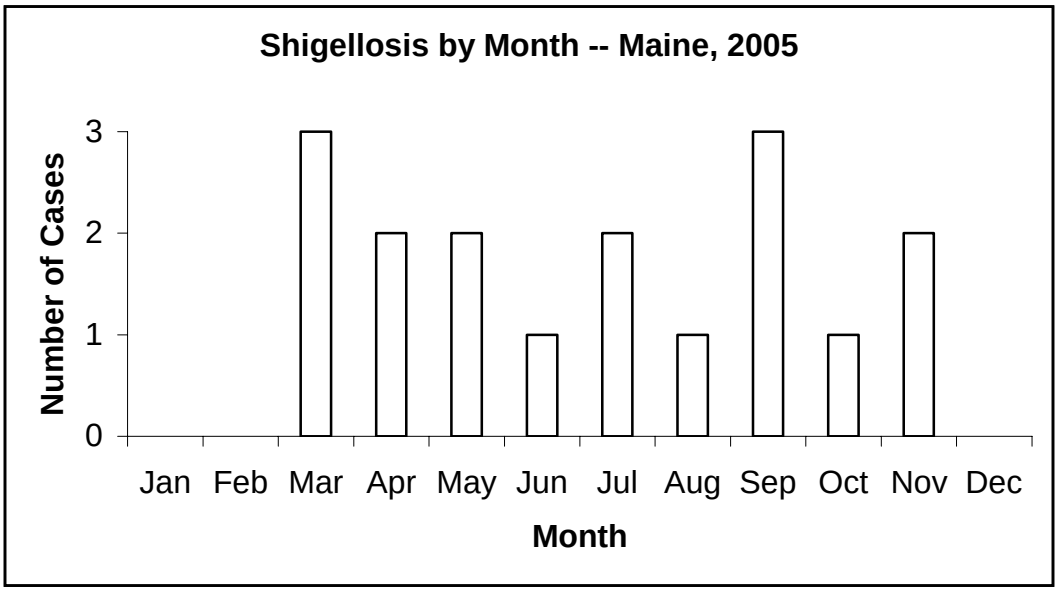


York County had the largest number of cases with eight. The county with the highest case rate was also York County.

Shigellosis by County – Maine, 2005		
County	**Cases per 100,000**	**Cases**
Androscoggin	0	0
Aroostook	0	0
Cumberland	1.5	4
Franklin	3.4	1
Hancock	0	0
Kennebec	0	0
Knox	0	0
Lincoln	0	0
Oxford	0	0
Penobscot	0	0
Piscataquis	0	0
Sagadahoc	0	0
Somerset	1.9	1
Waldo	0	0
Washington	3.0	1
York	4.0	8
State of Maine	1.1	15

The age range of shigellosis cases was 3 to 65 years. The median age was 31 years. Twenty percent of the cases were under the age of 25; 40% were ages 25-39 years; 33% were ages 40-64 years; and 7% were 65 years or older. Females accounted for 60% of the cases.

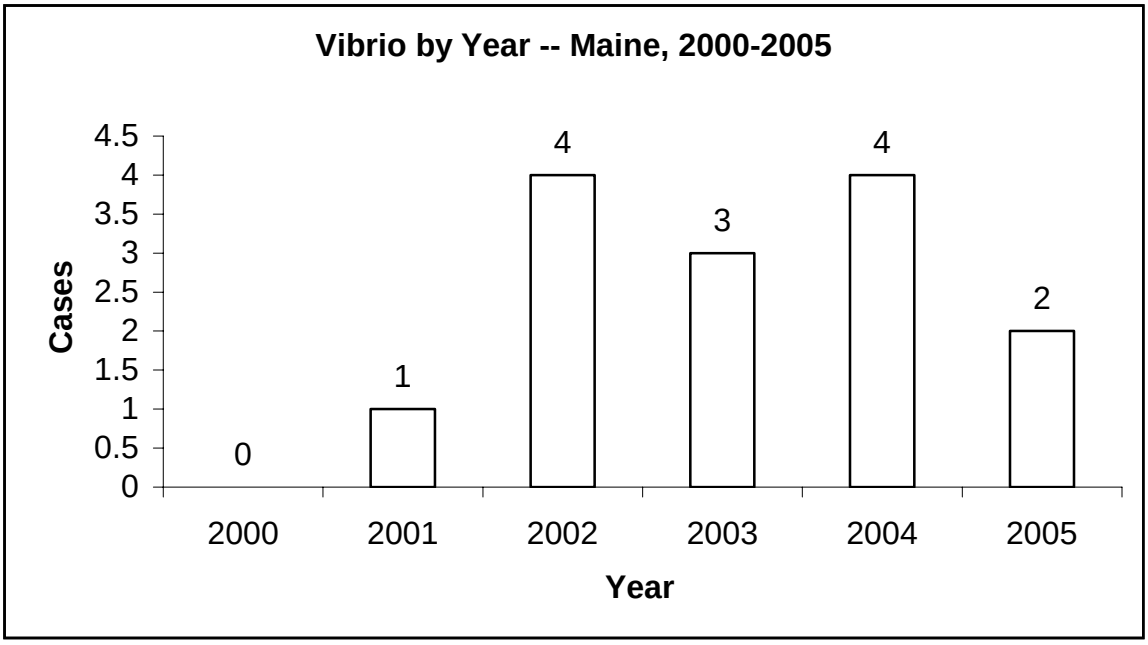
In September 2005, there was a multi-state shigellosis outbreak that was traced to an event at a country club in York County. A total of 49 people were ill; five cases were laboratory-confirmed. Three of the confirmed cases, included in this summary, were Maine residents while the remaining two were from New Hampshire.



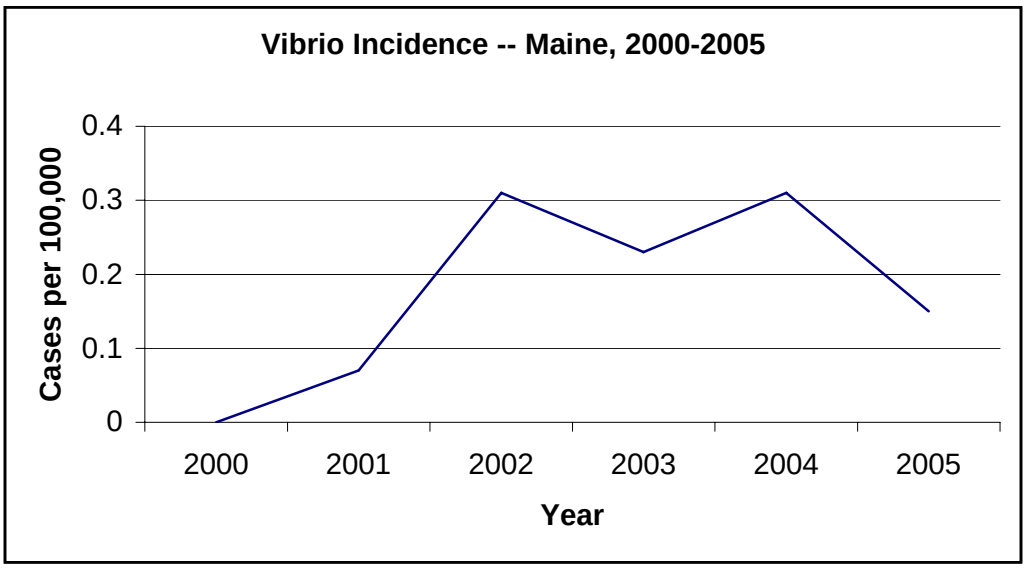
As with other enteric pathogens, all cases of shigellosis are investigated in conjunction with PFGE to determine outbreaks and potential sources for infection. Cases involved in child or patient care or food handling are restricted from work until cleared of the infection because of the low dose required for transmission.

Vibrio

Vibrio parahaemolyticus is the primary type of vibrio infection seen in Maine. It is characterized by watery diarrhea and abdominal cramps and most often associated with the ingestion of raw or undercooked seafood. During 2005, two cases of vibrio were reported in Maine.



The 5-year median of reported vibrio cases in Maine was 3. The case rate in 2005 for Maine was 0.2 per 100,000.



Cumberland and Somerset counties reported one case each. The ages of the two cases were 12 and 48 years. Both cases were female. The cases were reported in August and November.

The Maine CDC works closely with the Department of Marine Resources on each confirmed case of vibrio to determine if the source is a commercial seafood establishment that needs to be inspected.

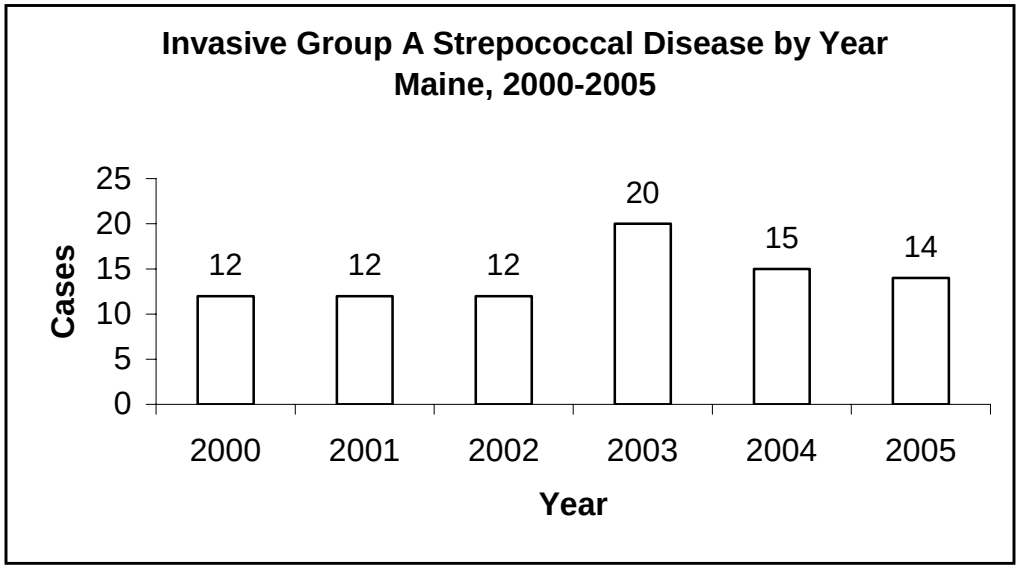
MENINGITIS AND SEPTICEMIA

Invasive Group A Streptococcal Disease

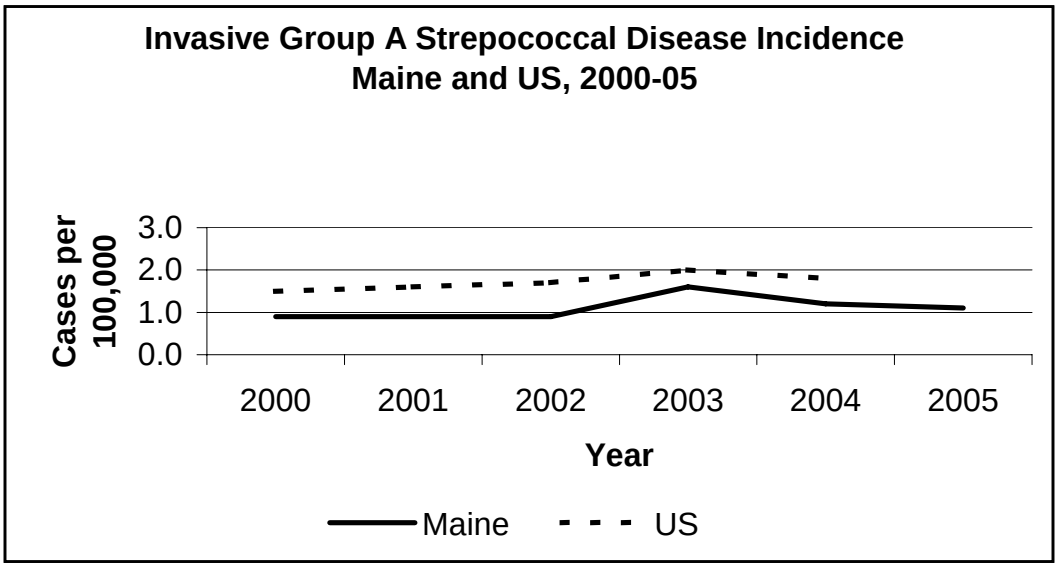
Group A *Streptococcus* is the most frequent bacterial cause of acute pharyngitis; it also gives rise to a variety of cutaneous and systemic infections. The disease is ordinarily spread by direct person-to-person contact, most likely via droplets of saliva or nasal secretions. Crowding such as occurs in schools or congregate living facilities, including military barracks, favors interpersonal spread of the organism. An increased incidence of streptococcal disease in northern latitudes during the colder months of the year has also been observed.

Few people who come into contact with Group A *Streptococcus* will develop invasive disease. While healthy people can also become ill with invasive Group A streptococcal disease, people with existing health conditions such as cancer, diabetes and kidney disease, and those who use medications such as steroids, are at higher risk of invasive disease.

In 2005, 14 cases of invasive Group A streptococcal disease were reported in Maine.



In the United States, 4,395 cases of invasive Group A streptococcal disease were reported in 2004, or 1.8 invasive Group A streptococcal disease cases per 100,000 population. In Maine, 1.1 invasive Group A streptococcal disease cases were reported per 100,000 population in 2005.



Invasive Group A streptococcal disease occurred in 8 Maine counties, including Aroostook, Cumberland, Franklin, Hancock, Oxford, Penobscot, Somerset, and York Counties. Franklin County reported the highest rate of invasive Group A streptococcal disease.

Invasive Group A Streptococcal Disease by County – Maine, 2005		
County	**Cases Per 100,000**	**Cases**
Androscoggin	0	0
Aroostook	1.4	1
Cumberland	0.7	2
Franklin	6.7	2
Hancock	1.9	1
Kennebec	0	0
Knox	0	0
Lincoln	0	0
Oxford	1.8	1
Penobscot	1.4	2
Piscataquis	0	0
Sagadahoc	0	0
Somerset	3.9	2
Waldo	0	0
Washington	0	0
York	1.5	3
State of Maine	1.1	14

Of the 14 invasive Group A *Streptococcal* disease cases reported in 2004, the mean age was 55 years (range 6-79).

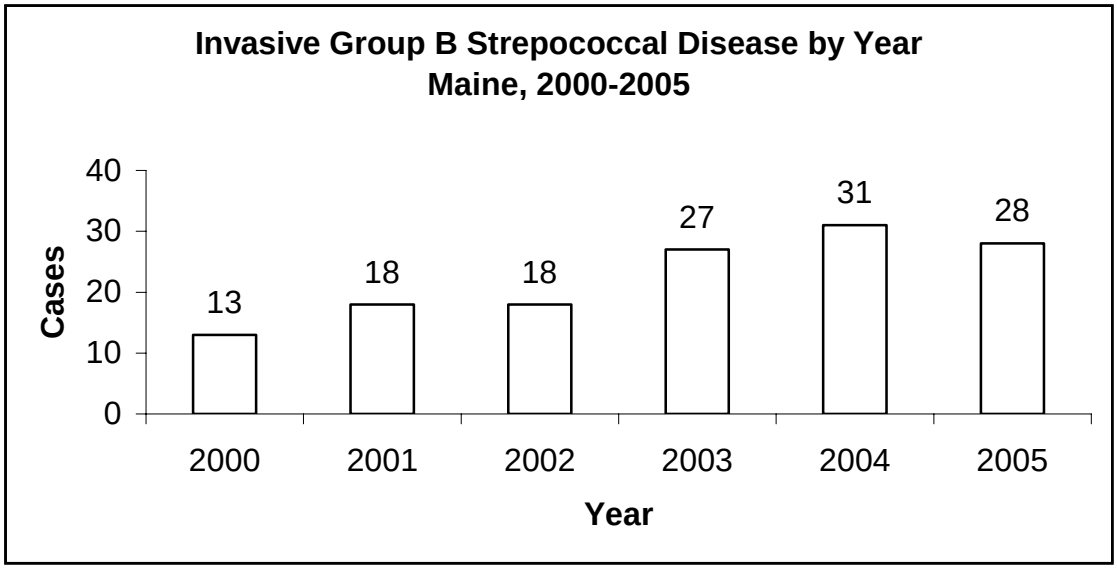
Invasive Group A streptococcal disease can be treated with many different antibiotics, sometimes requiring hospitalization and more intensive therapies. Early treatment can reduce the risk of morbidity and mortality. The spread of Group A streptococcal

infections may be reduced by good hand washing, especially after coughing and sneezing, before preparing foods, and before eating.

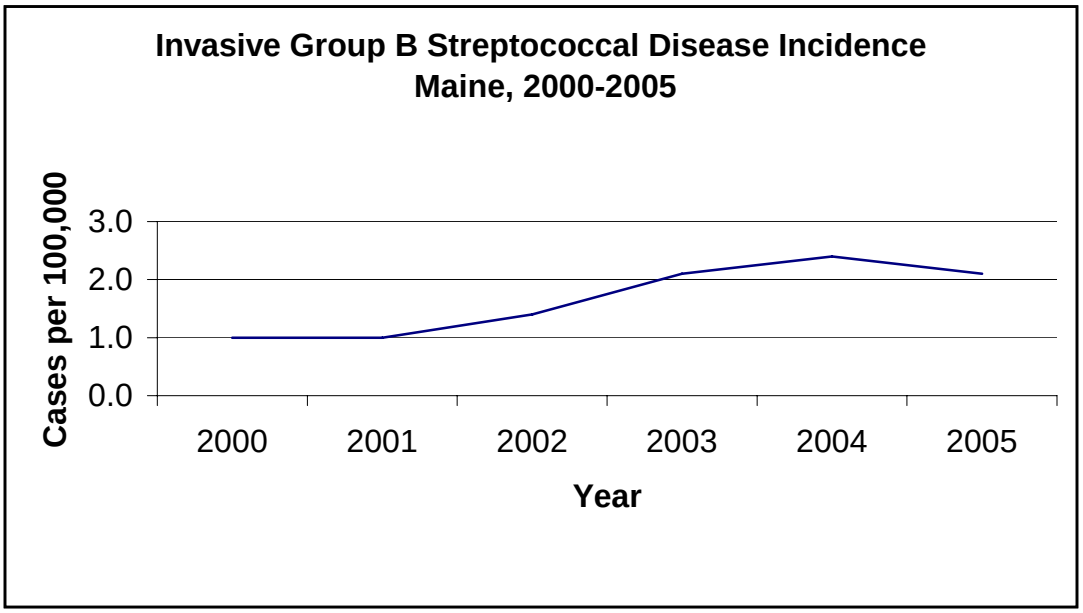
Invasive Group B Streptococcal Disease

Group B *Streptococcus* is a bacterium that causes illness in newborns, pregnant women, the elderly, and adults with other health conditions, such as diabetes or liver disease. Group B Streptococcal (GBS) disease is the most common cause of life threatening infections in newborns, often causing blood infections (sepsis) and infections of the fluid and lining surrounding the brain (meningitis). In pregnant women, GBS can cause bladder infections, womb infections (amnionitis and endometritis), and stillbirth. Among men and women who are not pregnant, the most common diseases caused by GBS are blood infections, skin and soft tissue infections, and pneumonia. Approximately 20% of men and nonpregnant women with GBS disease die of the disease. Asymptomatic carriage in gastrointestinal and genital tracts is common and intrapartum transmission via ascending spread from vaginal and/or gastrointestinal GBS colonization can result in infection. The mode of transmission of disease in nonpregnant adults and older children (>1 week) is unknown.

Invasive Group B Streptococcal disease in Maine has increased slightly since 2000. A total of 28 cases of invasive Group B Streptococcal disease were reported in Maine in 2005.



In the United States, approximately 19,000 cases of invasive Group B streptococcal disease occur annually (6.8 per 100,00 population). In 2005, 2.1 cases of invasive Group B streptococcal disease were reported in Maine per 100,000 population.



Invasive group B streptococcal disease was reported in eight Maine counties in 2005. Cumberland County had the highest rate of invasive group B streptococcal disease, with 6.7 cases per 100,000.

Invasive Group B Streptococcal Disease by County – Maine, 2005		
County	**Cases Per 100,000**	**Cases**
Androscoggin	2.8	3
Aroostook	0	0
Cumberland	5.8	16
Franklin	0	0
Hancock	0	0
Kennebec	1.7	2
Knox	0	0
Lincoln	0	0
Oxford	1.8	1
Penobscot	1.4	2
Piscataquis	0	0
Sagadahoc	2.7	1
Somerset	3.9	2
Waldo	2.6	1
Washington	0	0
York	0	0
State of Maine	2.1	28

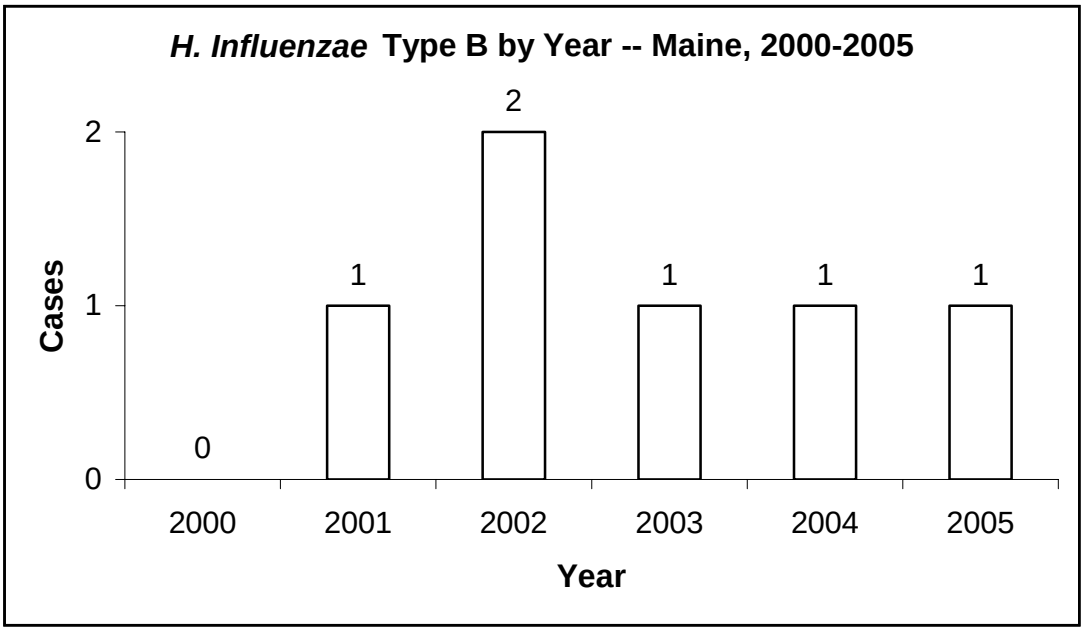
Of the 28 invasive Group B *Streptococcal* disease cases reported in 2005, the mean age was 60 years (range <1 month to 92 years).

Targeting prevention efforts for invasive group B streptococcal disease in adults is difficult, considering the mode of disease transmission among nonpregnant adults is unknown. However, there are opportunities for public health officials to work with community groups on education and prevention issues, to further prevent infection among infants and pregnant women, and to quickly identify infection among other adults.

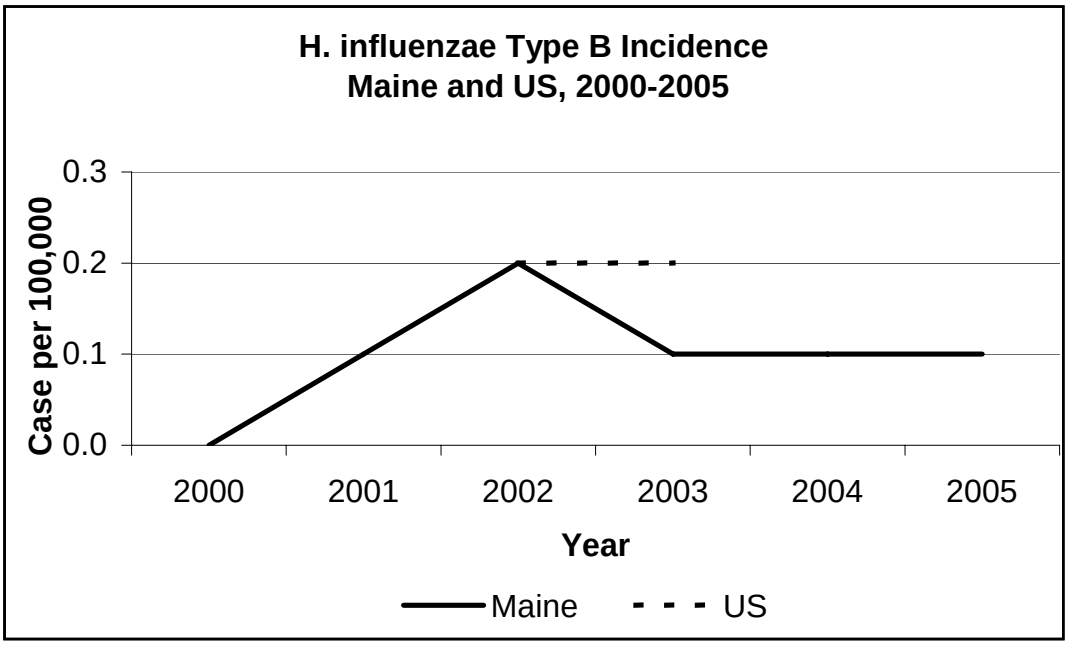
Haemophilus Influenzae Type B

Before the introduction of effective vaccines in 1990, *H. influenzae* type b (Hib) was the leading cause of bacterial meningitis and invasive bacterial disease among children <5 years of age. The most common forms of *H. influenzae* invasive disease are meningitis, epiglottitis, pneumonia, arthritis, and cellulitis. Asymptomatic human carriers are the only known reservoir for *H. influenza*e, and transmission is presumed to occur by respiratory droplet spread. Generally, the incidence of *H. influenzae* tends to peak in September-December and March-May, though the reason for this pattern is not known.

In 2005, one case of *H. influenzae* type b was reported in Maine in a previously-vaccinated 14-year-old male. The number of *H. influenzae* type b cases reported since 2000 has varied little, with no cases in 2000, one case each in 2001, 2003, 2004, and 2005, and two cases in 2002.



The statewide incidence of *H. influenzae* type B in 2005 was 0.1 per 100,000 population. The 2003 U.S. incidence of *H. influenzae* type B was 0.2 per 100,000 population (Note: United States case rates of *H. influenzae* type B were unavailable for 2000, 2001, and 2004.)

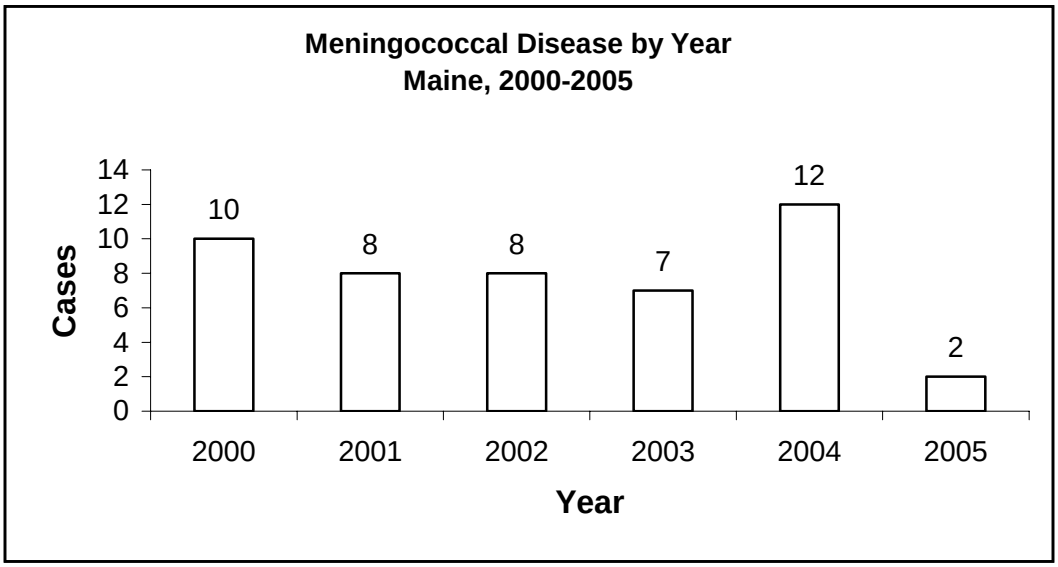


Meningococcal Disease

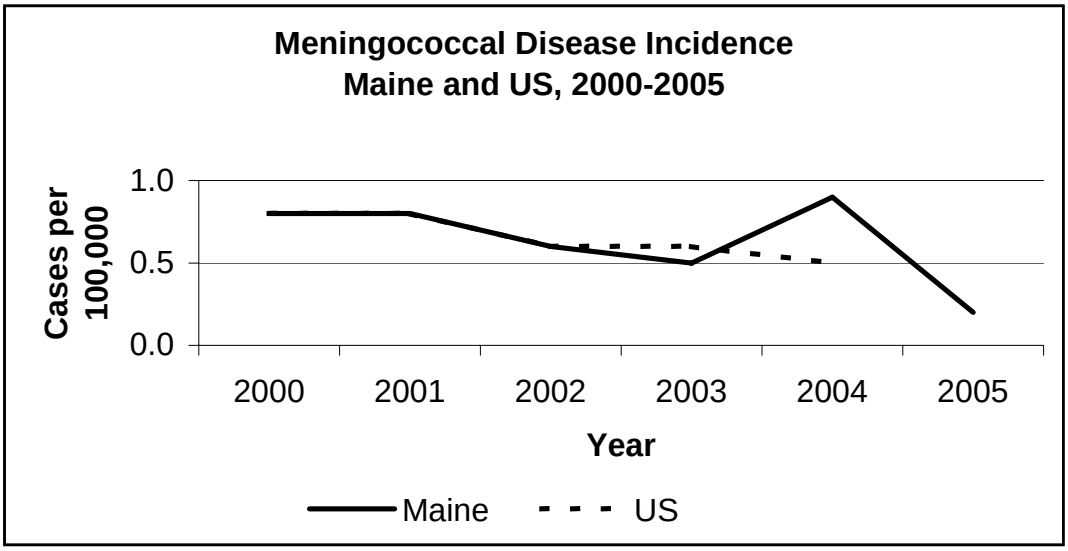
Meningococcal disease occurs from an infection with *Neisseria meningitidis*, a gram-negative bacterium. Meningococcal disease can result in meningitis, an inflammation of the tissue surrounding the brain and spinal cord, or meningococcemia, an infection of the blood. There are multiple serogroups of *Neisseria meningitides*; serogroup A, B and C organisms account for at least 90% of cases.

Symptoms of meningococcal disease include fever, headache, and stiff neck in cases with meningitis infection, and sepsis and rash in meningococcemia. The incubation period is commonly 3-4 days, but onset of illness can occur from 2-10 days after exposure. Transmission of meningococcal disease generally occurs through direct contact with respiratory secretions from the nose or throat of an infected person. Up to 15% of cases are fatal. Of patients who recover, 10-15% have permanent hearing loss, mental retardation, loss of limbs, or other sequelae.

In Maine, two cases of meningococcal disease were reported in 2005, a sharp decline since 2004 when 12 cases were reported.



In the United States, 1,361 cases of meningococcal disease were reported in 2004, or 0.5 meningococcal disease cases per 100,000 population. In Maine, 0.2 meningococcal disease cases were reported per 100,000 population in 2005.



In 2005, meningococcal disease cases were reported in York and Somerset counties only.

Meningococcal Disease by County – Maine, 2004		
County	**Cases Per 100,000**	**Cases**
Androscoggin	0	0
Aroostook	0	0
Cumberland	0	0
Franklin	0	0
Hancock	0	0
Kennebec	0	0
Knox	0	0
Lincoln	0	0
Oxford	0	0
Penobscot	0	0
Piscataquis	0	0
Sagadahoc	0	0
Somerset	1.9	1
Waldo	0	0
Washington	0	0
York	0.5	1
State of Maine	0.2	2

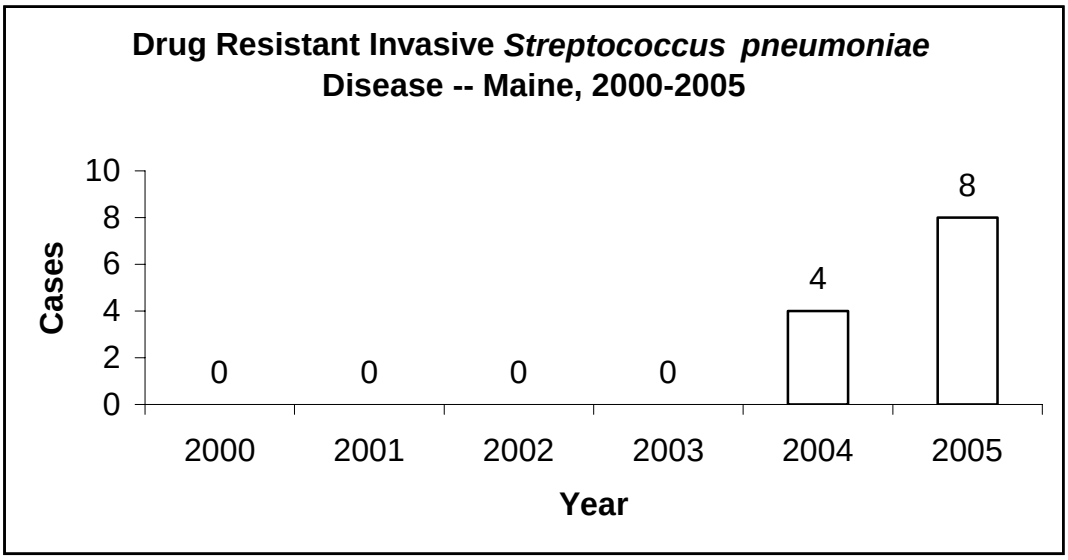
Suspected cases of meningococcal disease should be immediately reported to the Maine CDC, so that infection can be prevented among close contacts. There is a vaccine that protects against four strains of *N. meningitides* (A, C, W-135, and Y). The meningococcal conjugate vaccine licensed in 2005 is recommended for adolescents, college students, military recruits, international travelers, and certain other groups.

Invasive *Streptococcus pneumoniae*, Drug Resistant

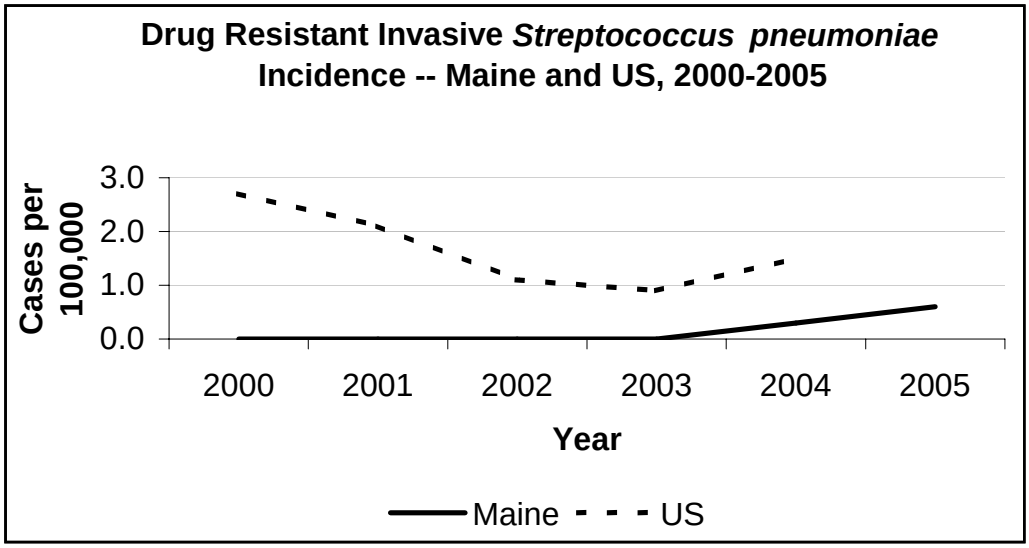
Streptococcus pneumoniae, also called pneumococcus, is a gram-positive bacteria that typically occur in pairs. Some pneumococci are encapsulated, resulting in a more pathogenic organism. Pneumococci are classified by serotype, and 90 serotypes have been identified, though only a few produce the majority of invasive pneumococcal infections. Seven serotypes (6A, 6B, 9V, 14, 19A, 19F, and 23F) account for most drug resistant (resistant to one or more commonly used antibiotics) *Streptococcus pneumoniae*.

Pneumococcal pneumonia is the most common clinical presentation of pneumococcal disease among adults. Infection is typically spread through person-to-person transmission, primarily through droplets. The incubation period is short, typically 1 to 3 days, and symptoms generally include an abrupt onset of fever and shaking chills, productive cough, pleuritic chest pains, shortness of breath, rapid breathing, and poor oxygenation. Until 2000, S*treptococcus pneumoniae* infection caused 60,000 cases of invasive disease annually, 40% of which were drug resistant. The incidence of drug resistant *Streptococcus pneumoniae* has decreased since the introduction of the pneumococcal conjugate vaccine for children in 2000.

In Maine, eight cases of drug resistant invasive S*treptococcus pneumoniae* were reported in 2005.



In the United States, 1.5 cases per 100,000 of drug resistant invasive *Streptococcus pneumoniae* disease were reported in 2004. In Maine, 0.6 cases per 100,000 of drug resistant invasive S*treptococcus pneumoniae* disease were reported in 2005.



In 2005, the median age of persons with drug resistant invasive *Streptococcus pneumoniae* was 64 years (range 12-85).

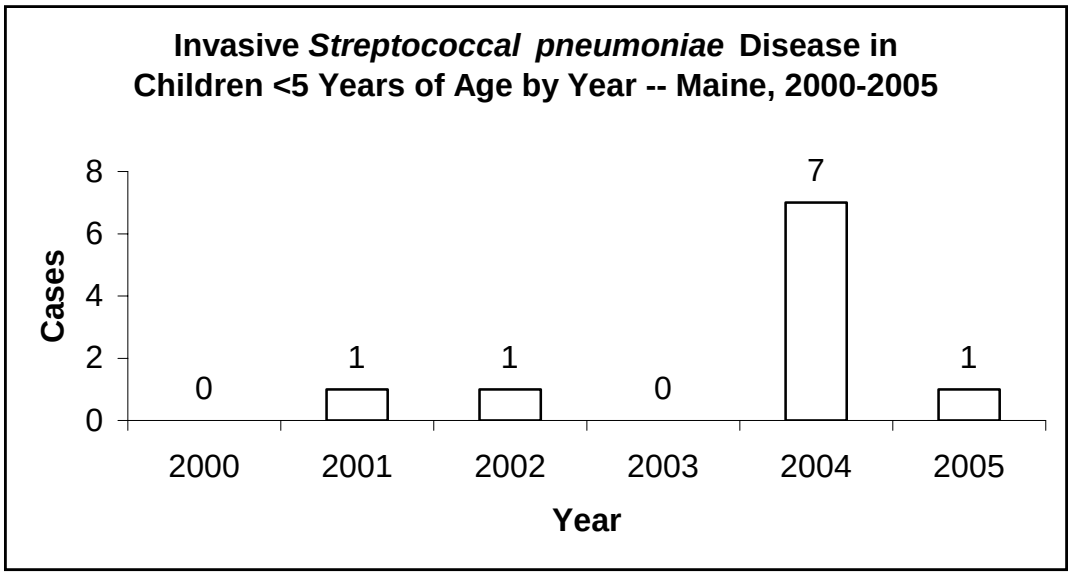
Widespread overuse of antibiotics and the spread of resistant strains of *Streptococcus pneumoniae* have contributed to increasing resistance. More prudent use of antibiotics and wider use of the pneumococcal vaccine are needed to reduce drug resistance.

Invasive *Streptococcus pneumoniae* Disease in Children <5 Years

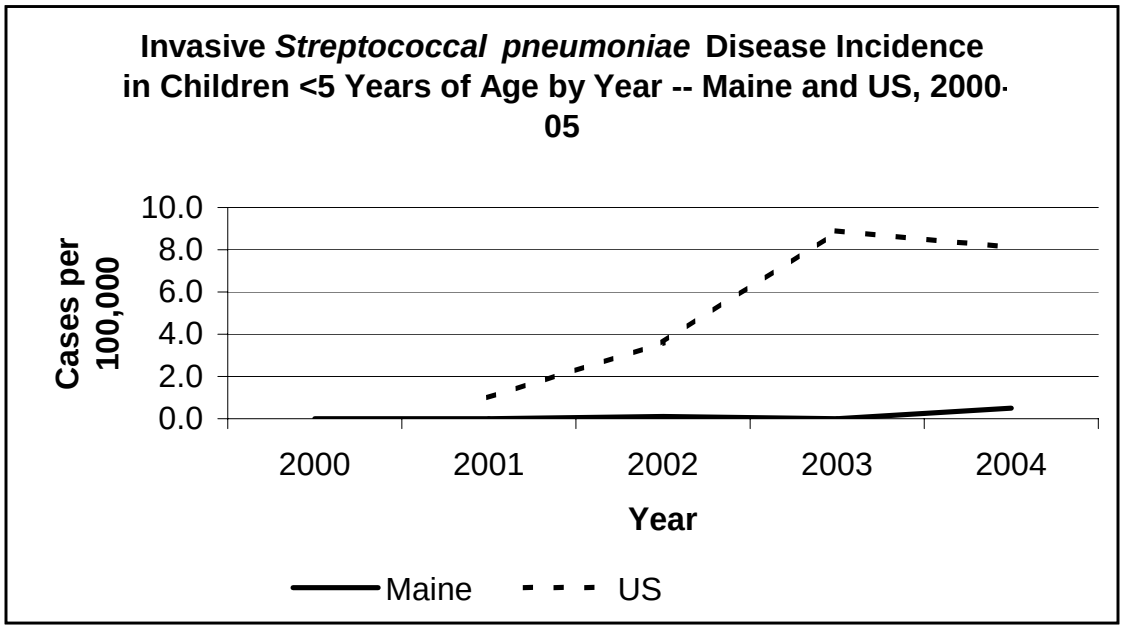
Streptococcus pneumoniae, also called pneumococcus, is a gram-positive bacteria that typically occur in pairs, called diplococci. Some pneumococci are encapsulated, resulting in a more pathogenic organism. Pneumococci are classified by serotype, and 90 serotypes have been identified, though only a few produce the majority of pneumococcal infections. In the United States, the seven most common serotypes isolated from blood or cerebral spinal fluid of children less than 5 years of age account for 80% of infections.

Pneumococcal bacteremia without a known site of infection is the most common invasive clinical presentation among children. An estimated 17,000 cases of invasive disease occur each year in the United States, of which 13,000 are bacteremia without a known site of infection and about 700 are meningitis. An estimated 200 children die every year as a result of invasive pneumococcal disease nationwide.

In Maine, one case of invasive pneumococcal disease in children less than 5 years of age was reported in 2005.



In the United States, 8.1 invasive *Streptococcus pneumoniae* disease cases among children less than 5 years of age were reported per 100,000 population in 2004. In Maine, 0.1 invasive S*treptococcus pneumoniae* disease cases among children less than 5 years of age were reported per 100,000 population in 2005.



Invasive *Streptococcus pneumoniae* disease among children less than 5 years of age was reported only in Franklin County in 2005.

Invasive *Streptococcal pneumoniae* Disease in Children <5 Years of Age by County – Maine, 2005		
County	**Cases Per 100,000**	**Cases**
Androscoggin	0	0
Aroostook	0	0
Cumberland	0	0
Franklin	3.4	1
Hancock	0	0
Kennebec	0	0
Knox	0	0
Lincoln	0	0
Oxford	0	0
Penobscot	0	0
Piscataquis	0	0
Sagadahoc	0	0
Somerset	0	0
Waldo	0	0
Washington	0	0
York	0	0
State of Maine	0.1	1

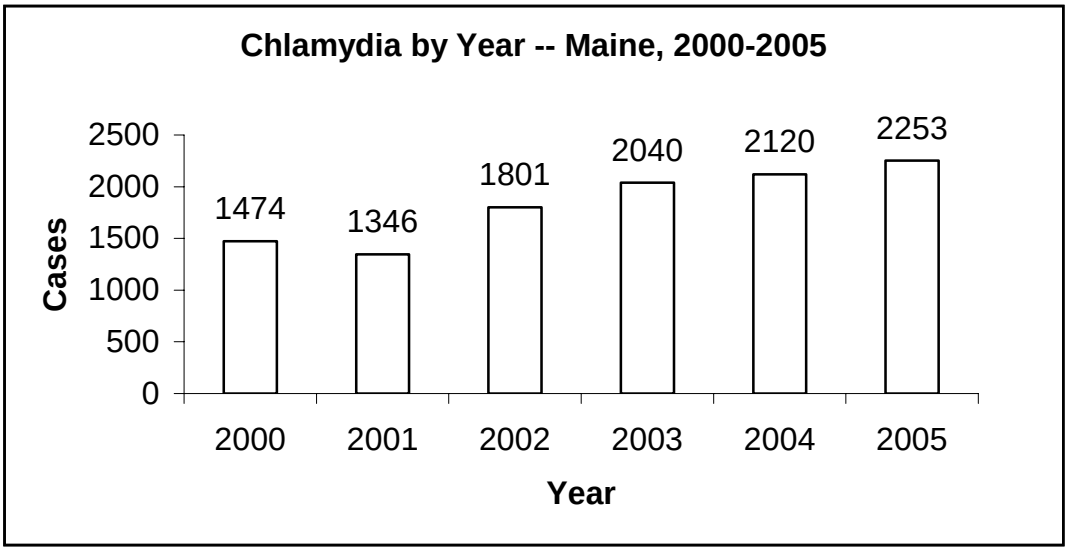
All children less than 24 months of age and children age 24-59 months with high risk medical conditions should be routinely vaccinated with pneumococcal conjugate vaccine

(PCV7). The primary series, initiated in infancy, consists of three doses routinely given at 2, 4, and 6 months of age. The fourth booster dose is recommended at 12-15 months of age. After 4 doses of PCV7 vaccine, virtually all healthy infants develop antibodies to all 7 serotypes contained in the vaccine.

SEXUALLY TRANSMITTED AND BLOOD BORNE DISEASES

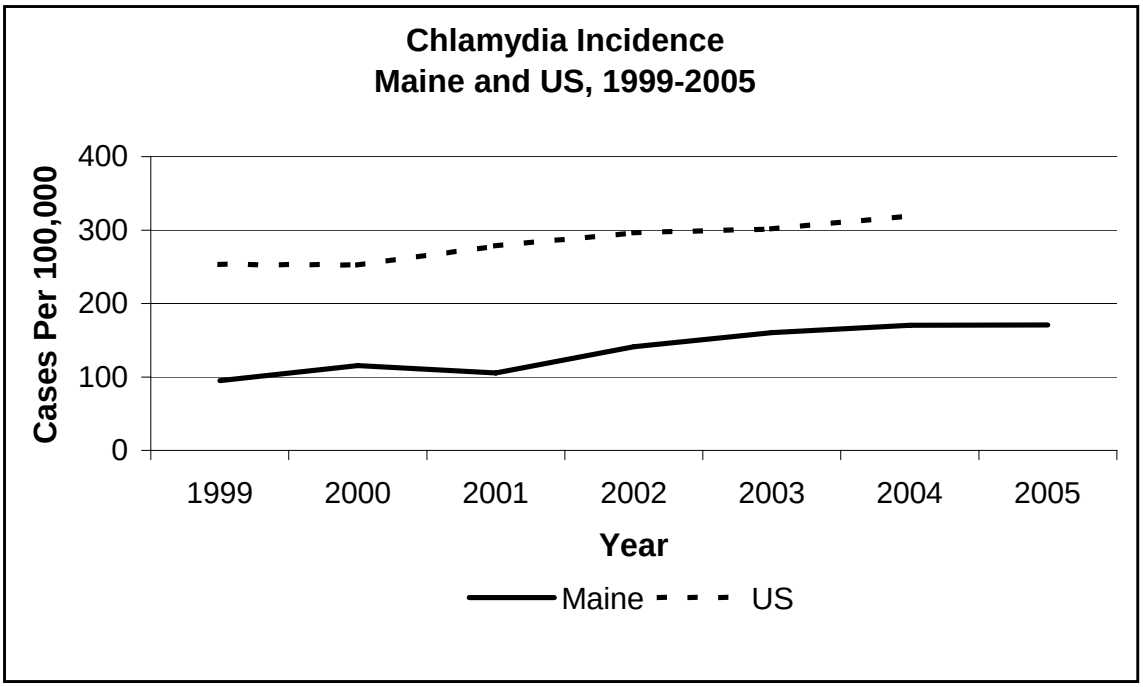
Chlamydia

Chlamydia is a common sexually transmitted disease (STD) caused by the bacterium *Chlamydia trachomatis* that can damage a woman's reproductive organs. Even though symptoms of Chlamydia are usually mild or absent, serious complications that cause irreversible damage, including infertility, can occur silently before a woman ever recognizes a problem. Chlamydia also can cause discharge from the penis of an infected man.

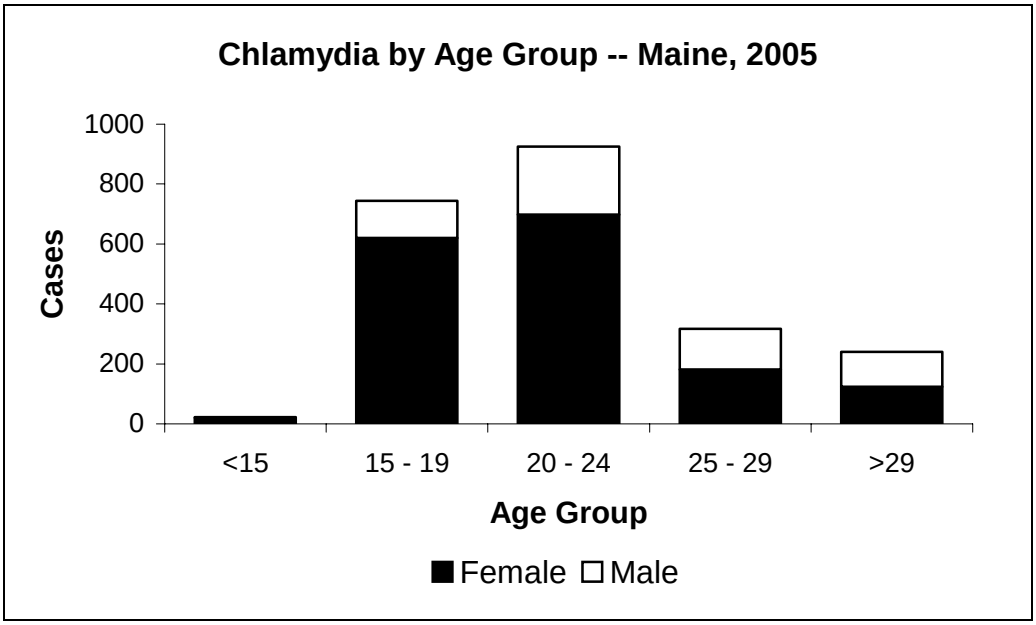


Chlamydia is the most frequently reported STD in the state. During 2005, 2,253 cases were reported. Apart from a slight decline in 2001, the number of diagnoses increased each year between 1996 and 2005. The number of 2005 reports represents an increase of 6% over the 2004 total. During the period 2000 to 2005, between 1,346 and 2,253 cases were reported annually, with a six year mean of 1,839 cases per year.

Case rates for chlamydia have risen both in Maine and nationally. In Maine, the rate has risen from 95.1 cases per 100,000 in 1999 to 171.0 cases in 2005. Nationally, the rate rose from 253.0 cases per 100,000 in 1999 to 319.6 in 2004.



People 24 years old and under are disproportionately affected by this disease, accounting for three-quarters of all 2005 cases. Females were diagnosed with chlamydia much more often than males, comprising 73% of all reports. This does not mean greater numbers of women are infected with chlamydia; women are tested for the disease more frequently than men, and may be more likely to exhibit symptoms of the disease.

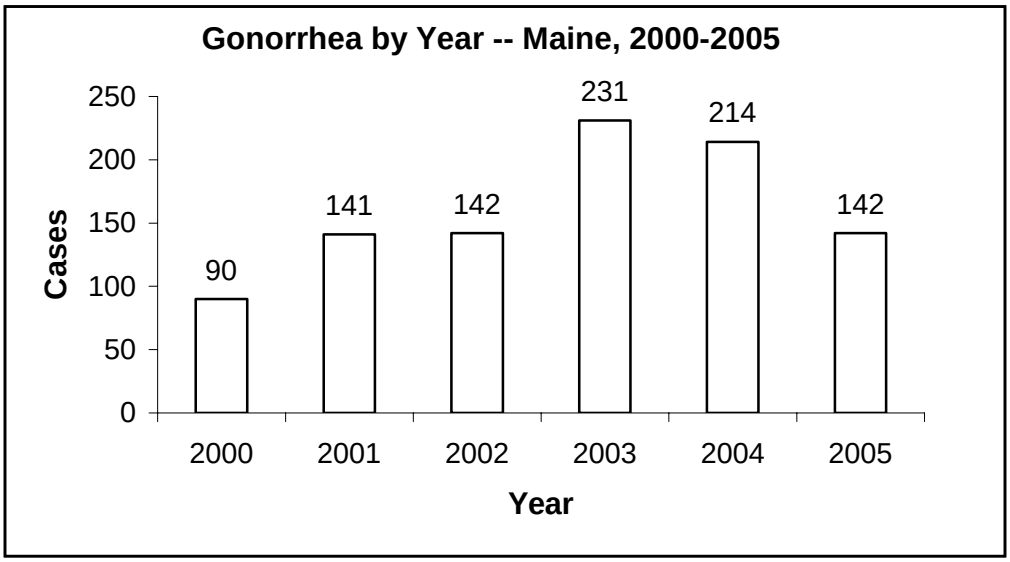


Androscoggin, Cumberland and Penobscot counties had chlamydia rates that were higher than the statewide rate.

Chlamydia by County – Maine, 2005		
County	**Case Rates**	**Cases**
Androscoggin	298.7	310
Aroostook	127.1	94
Cumberland	225.1	598
Franklin	122.2	36
Hancock	142.9	74
Kennebec	163.9	192
Knox	128.7	51
Lincoln	80.3	27
Oxford	100.4	55
Penobscot	208.4	302
Piscataquis	133.4	23
Sagadahoc	136.3	48
Somerset	112	57
Waldo	99.2	36
Washington	167.9	57
York	156.9	293
State of Maine	176.7	2,253

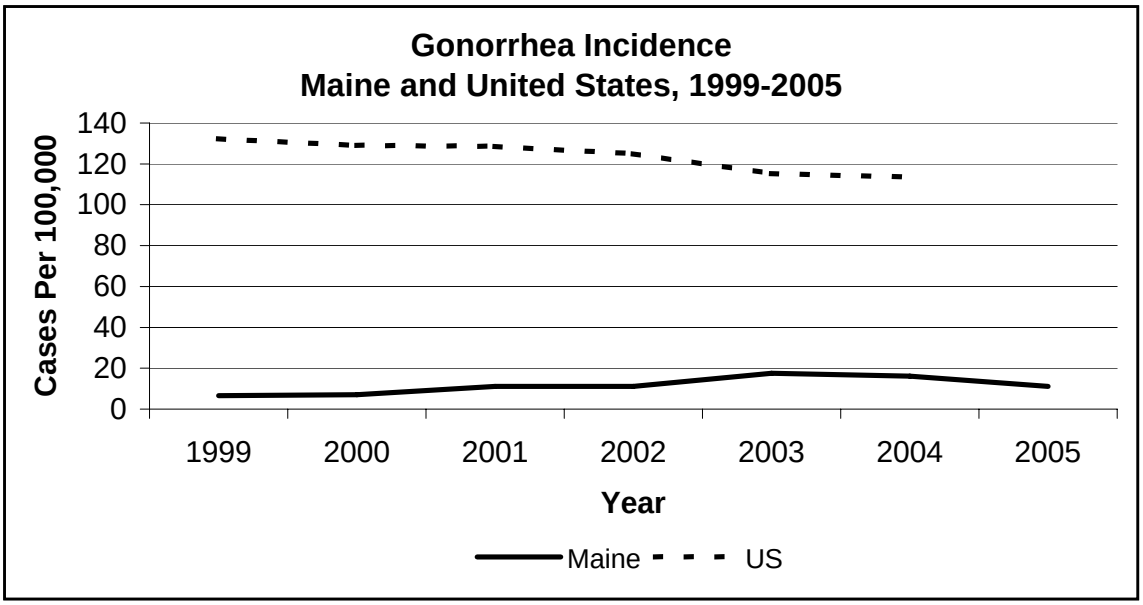
Gonorrhea

In women, gonorrhea is a common cause of pelvic inflammatory disease. In men, gonorrhea can cause epididymitis, a painful condition of the testicles that can lead to infertility if left untreated. Gonorrhea can also spread to the blood or joints. This condition can be life threatening. In addition, people with gonorrhea can more easily contract HIV, the virus that causes AIDS. HIV-infected people with gonorrhea are more likely to transmit HIV to someone else.

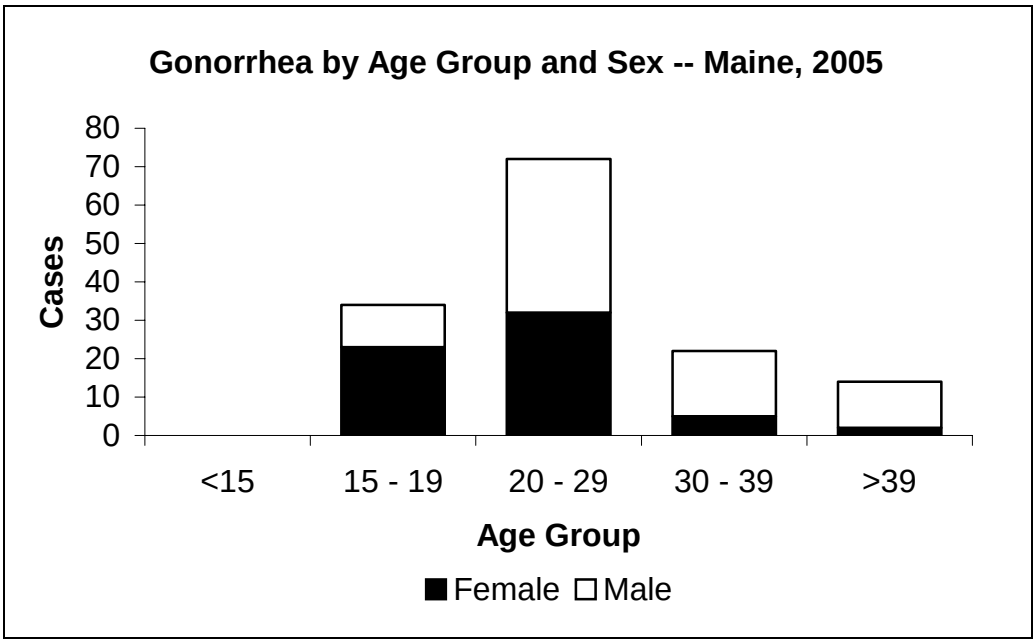


One hundred forty-two cases of gonorrhea were diagnosed in Maine in 2005, representing a 34% decrease from the 2004 total. This the second consecutive annual decrease in gonorrhea diagnoses, which fell 7% between 2003 and 2004. During the period 2000 to 2005, between 90 and 231 cases were reported annually, with a six-year median of 142 cases per year.

The Maine rate increased from 6.5 cases per 100,000 in 1999 to 11.1 cases in 2005. The US rate declined from 132.3 per 100,000 in 1999 to 113.5 in 2004.



Just over half of 2005 diagnoses occurred in the 20-29 age range, and approximately one quarter were less than 20 years old. Males comprised approximately 56% of all gonorrhea diagnoses. The greater proportion of male diagnoses is likely due to diagnoses among males who have sex with males (MSM), who accounted for one quarter of the cases reported in 2005.

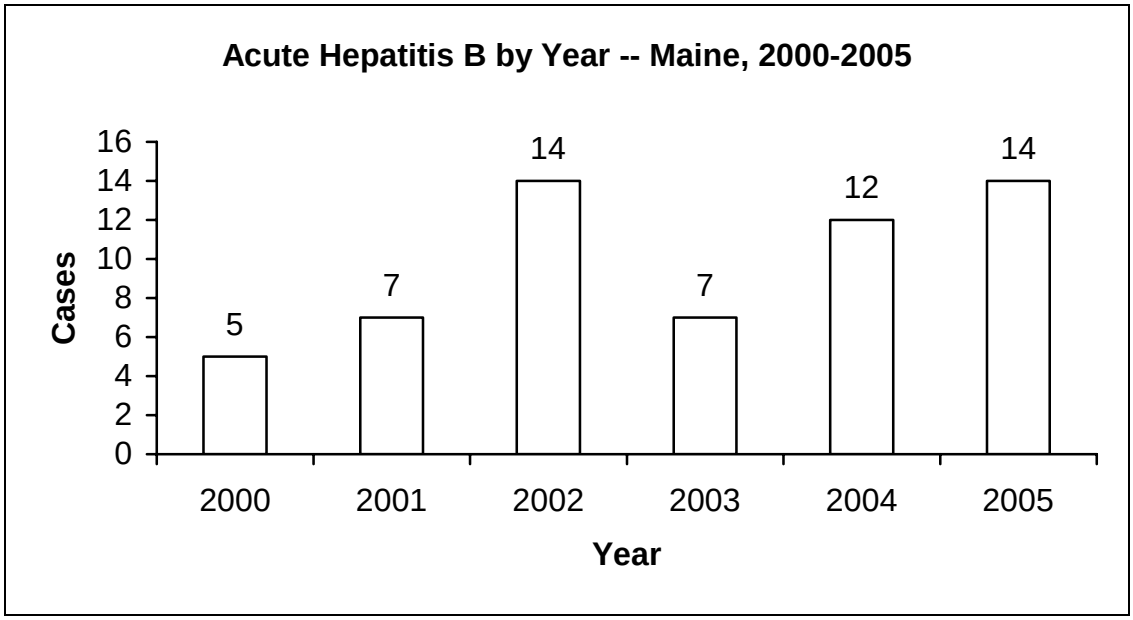


Two counties, Androscoggin and Cumberland, had gonorrhea rates that were higher than the state rate.

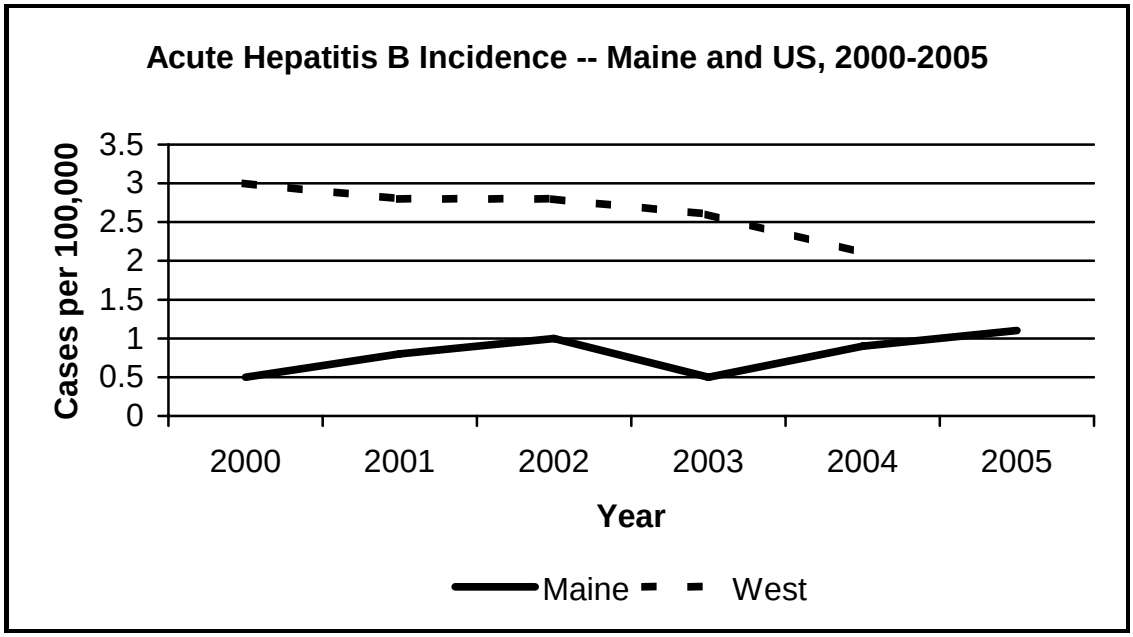
Gonorrhea by County – Maine, 2005		
County	**Cases per 100,000**	**Cases**
Androscoggin	30.8	32
Aroostook	10.8	8
Cumberland	21.1	56
Franklin	3.4	1
Hancock	5.8	3
Kennebec	9.4	11
Knox	2.5	1
Lincoln	3	1
Oxford	1.8	1
Penobscot	7.6	11
Piscataquis	0	0
Sagadahoc	2.8	1
Somerset	3.9	2
Waldo	8.3	3
Washington	8.8	3
York	4.3	8
State of Maine	11.1	142

Hepatitis B

Hepatitis B is a serious viral infection affecting the liver. It is caused by a DNA virus that is transmitted from one person to another through body fluids. People can contract the disease from sharing needles and having sex. Babies can contract the disease from their mothers.



In 2005, the acute hepatitis B case rate was 1.1 per 100,000 in Maine compared to 2.1 per 100,000 in the United States in 2004. Between 1990 and 2004 the United States experienced a 75% reduction in acute hepatitis B incidence (8.5 to 2.1 per 100,000).



Acute Hepatitis B by County – Maine, 2005		
County	**Cases Per 100,000**	**Cases**
Androscoggin	0.9	1
Aroostook	0	0
Cumberland	1.1	3
Franklin	0	0
Hancock	1.9	1
Kennebec	2.5	3
Knox	2.4	1
Lincoln	0	0
Oxford	0	0
Penobscot	1.4	2
Piscataquis	5.7	1
Sagadahoc	0	0
Somerset	1.9	1
Waldo	0	0
Washington	3.0	1
York	0	0
State of Maine	1.1	14

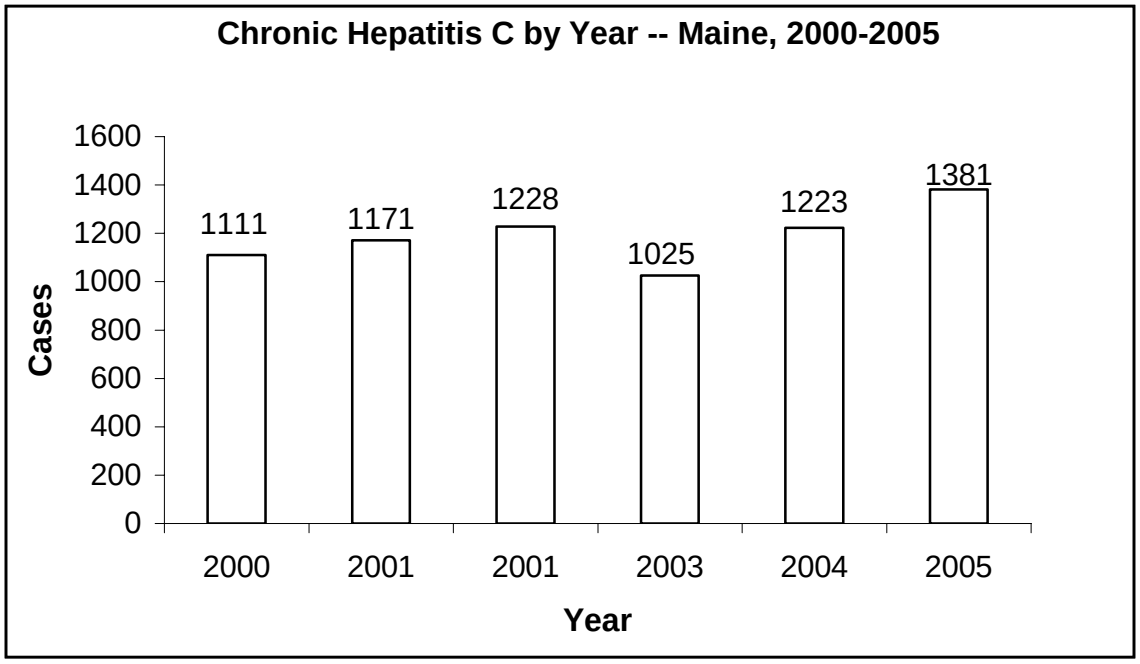
At present, efforts are focused on evaluating and improving surveillance systems as well as on case management for perinatal hepatitis B. Within the framework of a comprehensive hepatitis plan, the Maine CDC is initiating conversations with providers, patients, and other stakeholders with the view of improving reporting practices, increasing vaccine coverage rates among high-risk populations, and targeting the most vulnerable with education efforts.

The Maine CDC also administers a perinatal hepatitis B project through the Maine Immunization Program, which aims at preventing the spread of the disease from mother to child. The program has a statewide registry of pregnant women who are HBsAg positive. The project works with a woman's primary care providers, hospital infection control professionals, and managers of labor and delivery units to ensure timely immunization of newborns, as well as post-vaccination serological testing.

Hepatitis C

Almost four million Americans have been infected with the hepatitis C virus (HCV); of these 3.2 million are chronically infected. HCV is the most common bloodborne infection in the United States and the leading reason for liver transplantation. Although the number of new infections per year has declined from an average of 240,000 in the 1980s to about 26,000 in 2004, the burden of disease continues to grow. Hepatitis C infects individuals of all ages, ethnic groups, and socioeconomic classes in urban and rural areas of Maine. An estimated 20,000 Maine people have been infected with HCV. Because the infection is often asymptomatic and progresses slowly, most are unaware of their infection and are missing opportunities for therapeutic or preventive care.

Since official case reporting was initiated in 1997, the Maine CDC has documented increases in the numbers of individuals diagnosed with hepatitis C. These reports represent Maine people who tested positive for one or more hepatitis C virus diagnostic markers. In 2005, the Maine CDC received 1,381 reports of persons newly identified with markers for hepatitis C infection positivity, the vast majority of whom were chronically infected. Although the 1,381 reports made in 2005 represent an increase in reports over the 1,223 received in 2004, the annual total is just slightly higher than the numbers of reports received over the previous five years.

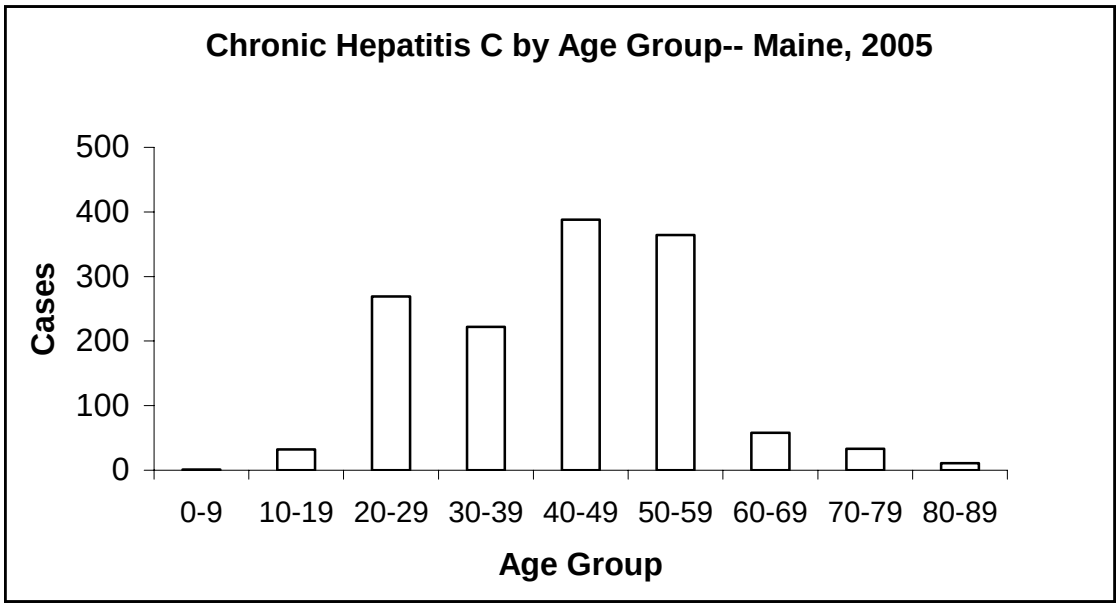


Due to the number of hepatitis C reports, it is not possible for the Maine CDC to follow up on each individual report. In addition, because there is no test for acute hepatitis C infection, and because acute infection is usually asymptomatic, acute infections frequently go unrecognized. Thus, while there were no reported cases of acute hepatitis C that met the federal CDC case definition in 2005, it is likely that such infections occurred in Maine.

Using Maine 2005 Census data, rates per 100,000 population were calculated for all of the 16 Maine counties. Washington and Knox counties had the highest case rates followed by Cumberland, Penobscot, and Androscoggin counties respectively. All of the aforementioned counties exceeded the rate for the state as a whole. Before drawing any conclusions from these data, it is important to consider the many factors that may contribute to differences among the counties. These factors include: the location of hepatitis C testing sites, the location of reporting correctional facilities (for example, 29 (45%) cases from Knox County were incarcerated at the time of report), the location of the Veterans Administration Hospital (which is a site for treatment of large numbers of patients), and health care providers' initiative to test and report positive results. In addition, the location of practices of liver specialists may also explain some of the differences.

Chronic Hepatitis C by County – Maine, 2005		
County	**Cases per 100,000**	**Cases**
Androscoggin	110.2	119
Aroostook	56.0	41
Cumberland	142.9	393
Franklin	97.6	29
Hancock	83.9	45
Kennebec	100.8	122
Knox	155.3	64
Lincoln	76.6	27
Oxford	63.6	36
Penobscot	112.9	166
Piscataquis	101.8	18
Sagadahoc	37.9	14
Somerset	77.4	40
Waldo	49.1	19
Washington	158.5	53
York	89.5	181
State of Maine	103.4	1,367

*Note: County of residence data were available for 1,367 of 1,381 disease reports received in 2005. County of residence was defined by using the town of residence for the person reported (n=806). In the event town of residence was unavailable (n=575), the location of the medical provider performing the hepatitis C virus test was used as a proxy. A hepatitis C positive report was defined as the presence of any positive serologic marker for hepatitis C infection. These markers include anti-HCV (EIA), anti-HCV (RIBA), hepatitis C antigen (RT-PCR), or reports of HCV genotype. It should be noted that not all anti-HCV (EIA) reports were verified by supplemental assay. Also, neither EIA nor RIBA tests can distinguish between past and current infection. Reports were not cross-referenced with other state registries, but do represent unduplicated individuals reported for each year.

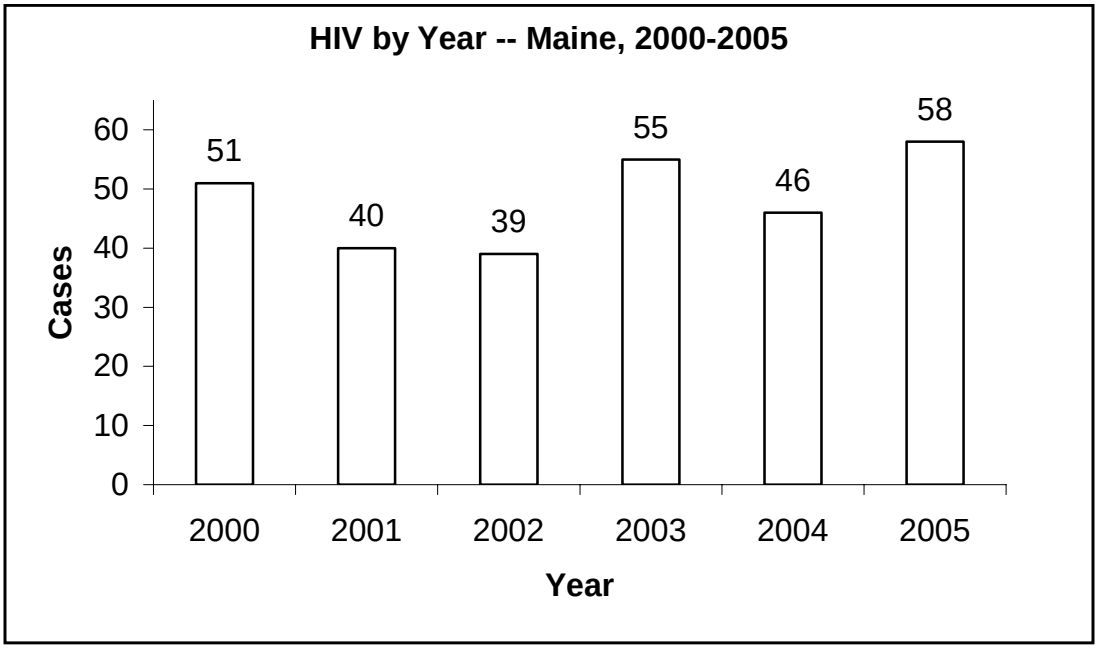


Note: Age data were available for 1,378 of 1,381 cases.

The age distribution for hepatitis C reports made in 2005 demonstrated that the majority of reports received were for persons aged 20-59, with 20% of reports made for persons aged 20-29 and 55% of reports made for persons aged 40-59. Of the 1,381 reported individuals in 2005, 470 (34%) were females and 911 (66%) were males. This represents a slight increase in the percentage of men reported as compared to 61% in 2004 and is comparable with national statistics.

To help identify cases of hepatitis C infection in Maine, medical providers are encouraged to consider each patient's risk for HCV infection to determine the need for testing. Patients for whom testing is indicated include: persons with past or present injection drug use; recipients of transfusions or organ transplants before July 1992; recipients of clotting factor concentrates produced before 1987; persons on chronic hemodialysis; persons with persistently abnormal alanine aminotransferase levels; healthcare, emergency medical, and public safety workers after needle sticks, sharps or mucosal exposures to HCV-positive blood; and children born to HCV-positive women. Children should not be tested for anti-HCV before 18 months of age as anti-HCV from the mother might last until this age. If a diagnosis is desired prior to 18 months of age, testing for HCV RNA can be performed at 1-2 months of age. HCV RNA testing should be repeated at a subsequent visit regardless of the initial HCV RNA test result. Persons who test positive for HCV should be screened for susceptibility to hepatitis A and B virus infection and immunized appropriately.

HIV/AIDS



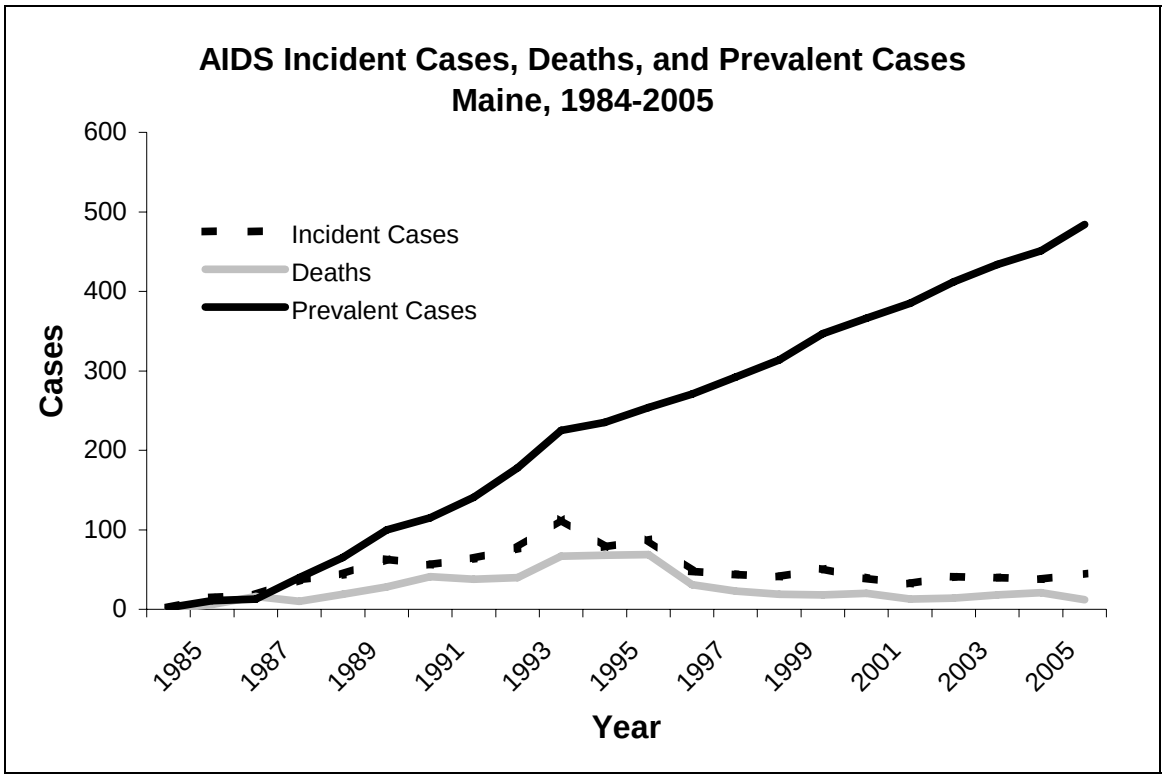
Since the Maine Center for Disease Control and Prevention began recording new HIV diagnoses in 1987, almost 1,500 positive HIV tests have been reported. As has been seen nationally, the annual incidence of HIV-positive diagnoses in Maine has declined from more than 100 positive test reports per year in the late 1980s and early 1990s to fewer than half that number in recent years. Between 2000 and 2005 there were between 39 and 58 cases reported annually, with a six year median of 49 cases per year.

Fifty-eight new HIV diagnoses occurred in 2005. Of these, 20 were diagnosed with AIDS within six months of their initial HIV diagnosis. Overall, approximately 45% of individuals diagnosed with HIV during the past 5 years were ill enough to be classified with AIDS within 6 months of testing positive, indicating that they had probably been infected a significant period of time before diagnosis.

Fourteen people died from AIDS in 2004. Maine CDC data indicate that HIV was the 7th leading cause of death among persons aged 25 to 44 in Maine in 2003.

Just under 1,100 people are estimated to be living in Maine with diagnosed HIV infection. An additional 350-450 individuals may be unknowingly infected with the virus for a total estimate of 1,450 to 1,550 people living with HIV/AIDS in Maine.

Each year since 1985 there have been more new AIDS diagnoses than deaths, indicating that the overall number of people living with AIDS has continued to increase over time. These data suggest that there are more people living with HIV/AIDS in Maine than ever before, with an estimated 484 persons living with AIDS at the end of 2005.



In 2005, Cumberland County had the most HIV cases diagnosed with 22, followed by Kennebec, Androscoggin and York counties. Thirteen of 16 Maine counties had residents who were newly diagnosed with HIV in 2005.

HIV Diagnoses by County – Maine, 2005		
County	**Cases per 100,000**	**Cases**
Androscoggin	5.6	6
Aroostook	1.4	1
Cumberland	8.0	22
Franklin	0	0
Hancock	3.7	2
Kennebec	6.6	8
Knox	2.4	1
Lincoln	0	0
Oxford	5.3	3
Penobscot	2.7	4
Piscataquis	0	0
Sagadahoc	2.7	1
Somerset	1.9	1
Waldo	5.2	2
Washington	3.0	1
York	3.0	6
State of Maine	4.4	58

For people living with diagnosed HIV/AIDS, four counties, Cumberland, Androscoggin, Kennebec, and Hancock had rates that were higher than the statewide rate of 80.1 cumulative cases per 100,000 population. Cumberland County had the highest rate, with 142.2 cumulative cases per 100,000 population. This rate is 64% higher than the next highest rate in Androscoggin County. Cumberland also had the most cases overall, with 391 cases or 37% of the total number of cases reported.

People Living with Diagnosed HIV/AIDS by County Maine, 2005		
County	**Cases per 100,000**	**Cases**
Androscoggin	91.6	99
Aroostook	34.1	25
Cumberland	142.2	391
Franklin	30.3	9
Hancock	85.7	46
Kennebec	89.3	108
Knox	53.4	22
Lincoln	36.9	13
Oxford	35.3	20
Penobscot	57.1	84
Piscataquis	28.3	5
Sagadahoc	37.9	14
Somerset	48.4	25
Waldo	62.0	24
Washington	68.8	23
York	74.1	150
State of Maine	80.1	1,058

Of the fifty-eight new HIV diagnoses reported during 2005, 10 were women and 48 were men. Seventeen percent of persons newly diagnosed were women, versus 16% in the group “People Living with Diagnosed HIV/AIDS in Maine.”

HIV Diagnoses and People Living with Diagnosed HIV/AIDS by Sex Maine, 2005				
Sex	**HIV diagnoses**		**People living with diagnosed HIV/AIDS**	
	No.	**%**	**No.**	**%**
Male	48	83	884	84
Female	10	17	171	16
Male-to-female transgender	0	0	3	<1
Total	58	100	1,058	100

Eighty percent of 2005 HIV diagnoses were 30 years of age and older versus 74% of persons living with diagnosed infection. Twenty-one percent of 2005 diagnoses were among persons in their teens and twenties. This emphasizes the need for continuing HIV prevention services for young people.

HIV Diagnoses and People Living with Diagnosed HIV/AIDS by Age at HIV Diagnosis (if known) – Maine, 2005				
Age at HIV Diagnosis	**HIV diagnoses**		**People living with diagnosed HIV/AIDS**	
	No.	**%**	**No.**	**%**
<13	0	0	8	1
13-19	1	2	19	2
20-29	11	19	185	23
30-39	14	24	306	39
40-49	20	35	203	26
>49	12	21	70	9
Total	58	100	791	100

The majority of persons affected by HIV in Maine are non-Hispanic White, with this group comprising 86% of both 2005 diagnoses and persons living with diagnosed infection. After Whites, African American/Blacks are most represented, comprising 7% of 2005 diagnoses and 8% of people living with diagnosed HIV/AIDS. Hispanics comprised 7% of 2005 diagnoses and 6% of people living with diagnosed HIV/AIDS. Although racial and ethnic minorities make up less than 4% of Maine's population, people of color comprise 14% of persons living with diagnosed infection. African-American/Blacks, Hispanics, and American Indians in Maine are all disproportionately affected by HIV.

HIV Diagnoses and People Living with Diagnosed HIV/AIDS by Race and Ethnicity – Maine, 2005				
Race	**HIV diagnoses**		**People living with diagnosed HIV/AIDS**	
	No.	**%**	**No.**	**%**
White	54	93	966	91
Black or African American	4	7	80	8
Asian	0	0	2	<1
American Indian/Alaskan Native	0	0	10	1
Native Hawaiian or Other Pacific Islander	0	0	0	0
More than one race	0	0	0	0
Some other race	0	0	0	0
Unknown	0	0	0	0
Total	58	100	1,058	100
Ethnicity				
Hispanic	4	7	58	6
Not Hispanic	54	93	1,000	94
Total	58	100	1,058	100

In comparison to the general population, two key risk groups are disproportionately affected by HIV in Maine. These include males who have unsafe sex with males (MSM) and injection drug users who shared works or needles (IDU). Heterosexual contact with an at-risk partner is also a significant mode of transmission.

In 2005, more than half (53%) of HIV diagnoses were attributed to male-to-male sexual contact, followed by heterosexual transmission with an at-risk partner (7%). Exposure was unknown or undetermined for 40% of diagnoses. This includes individuals who reported heterosexual contact, but were unable to identify an at-risk partner (35%). An at-risk partner is defined as a person who is MSM (female partners only), IDU, or HIV-infected.

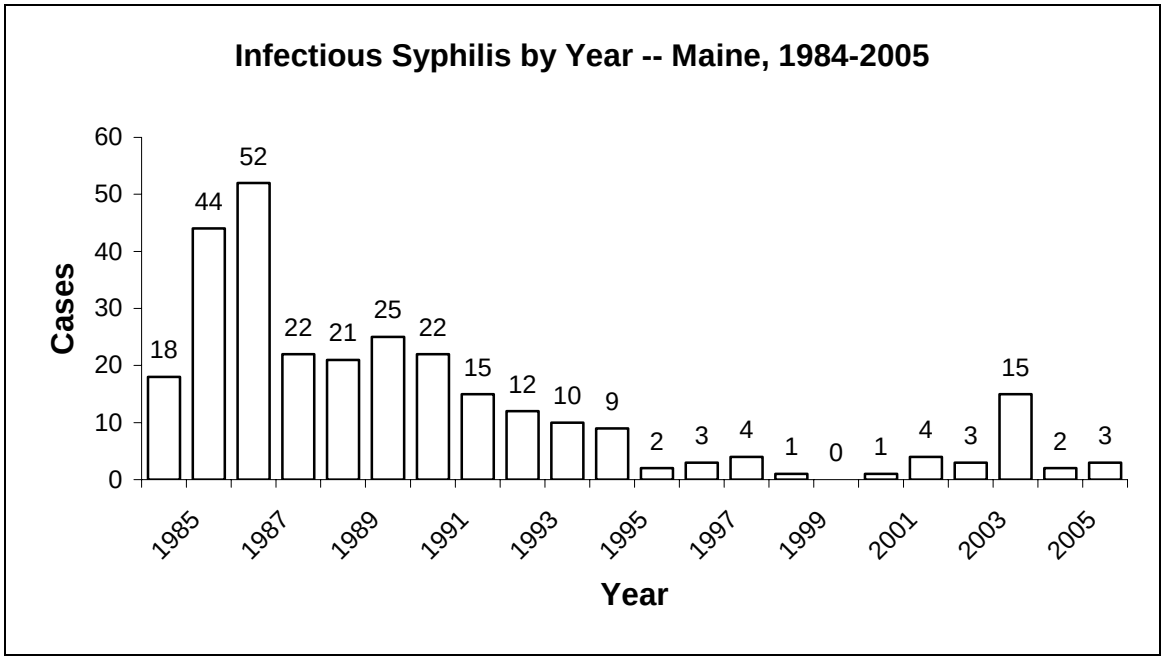
It is important to note that, in some instances, individuals may not report their true transmission risk because of fears about disclosure of participation in culturally stigmatized behaviors such as injection drug use and male-to-male sex. Reluctance to admit stigmatized behaviors likely contributed to the high number of individuals reporting heterosexual contact with non-at-risk partners in 2005.

People infected through contaminated blood products and mother-to-infant transmissions represent a small number of people living with diagnosed HIV in Maine. There have been no documented instances of occupationally-acquired HIV infection in the state.

HIV Diagnoses and People Living with Diagnosed HIV/AIDS by Mode of Transmission – Maine, 2005

Mode of Transmission	HIV diagnoses		People living with diagnosed HIV/AIDS	
	No.	%	No.	%
Males who have sex with males (MSM)	31	53	601	57
Injection drug users (IDU)	0	0	144	14
MSM/IDU	0	0	36	3
Heterosexual contact with at-risk partners	4	7	119	11
Heterosexual contact with no at-risk partners disclosed	20	34	86	8
Received contaminated blood products	0	0	13	1
Child born to mother with HIV	0	0	11	1
Undetermined	3	5	48	5
Total	58	100	1,058	100

Syphilis



After peaking in the mid-1980s, primary and secondary syphilis steadily declined in Maine until 1999, when there were no cases reported in the state. During 2003, syphilis reemerged with 15 cases reported. This total was greater than any annual total since 1991. An increased number of diagnoses was not maintained during 2004 and 2005. In 2005, only three cases were reported in the state.

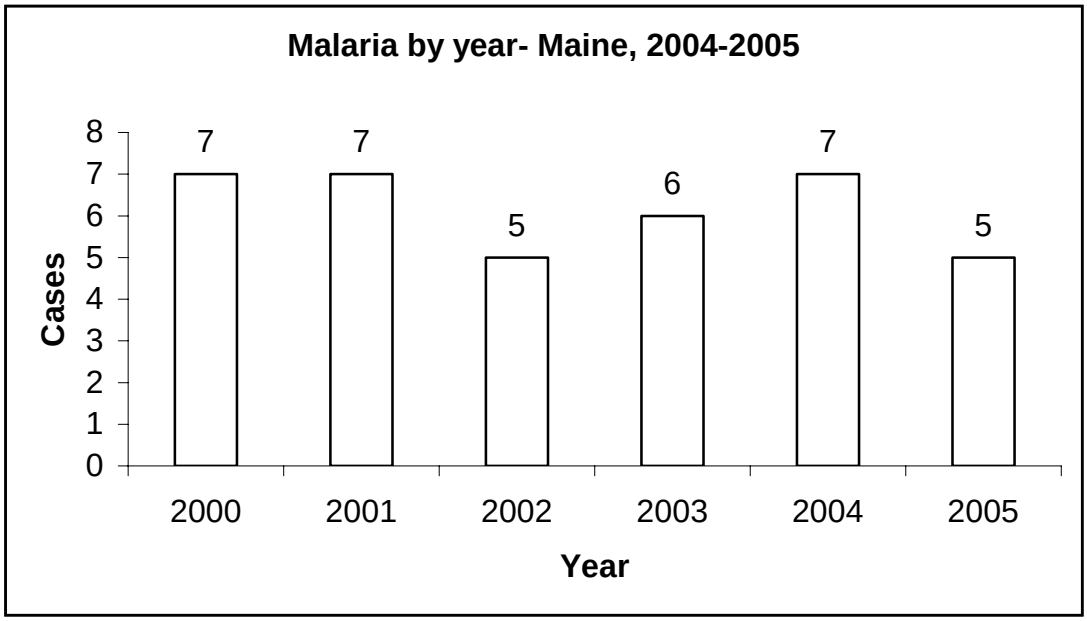
Genital sores (chancres) caused by syphilis make it easier to transmit and acquire HIV infection sexually. There is an estimated two- to five-fold increased risk of acquiring HIV infection when syphilis is present.

Syphilis can also lead to serious health complications among pregnant women and their infants, including spontaneous abortions, stillbirths, and multi-system disorders caused by congenital syphilis acquired from mothers with syphilis.

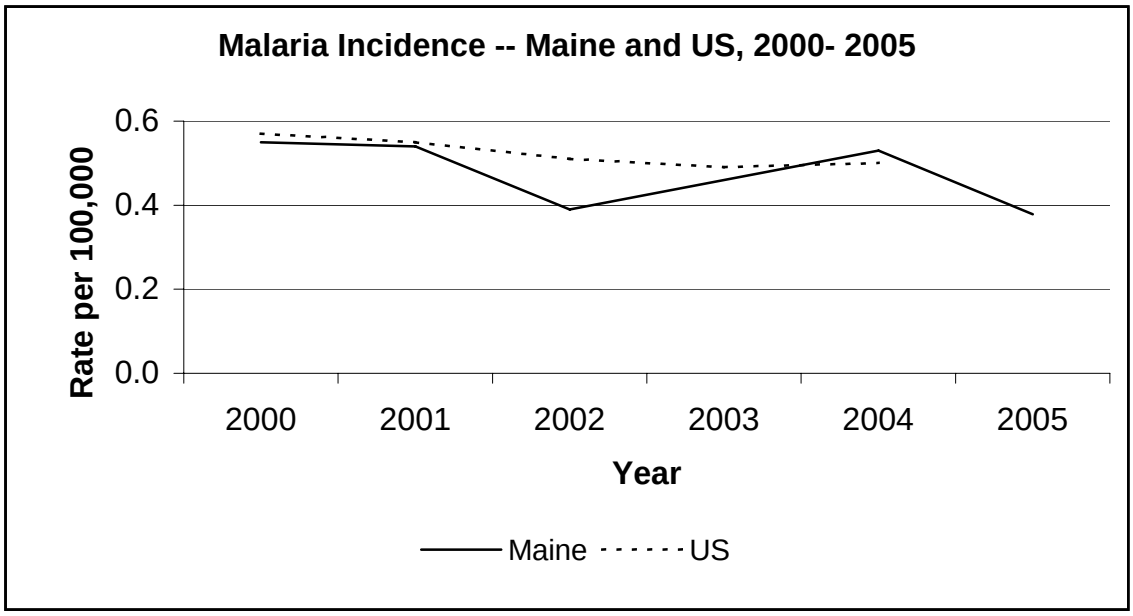
VECTORBORNE DISEASES

Malaria

Five confirmed cases of malaria were reported in Maine during 2005. All cases reported travel to foreign countries. Three cases were due to *P. falciparum*, one due to *P. vivax*, and one was undetermined.



The incidence of malaria in Maine is low, at approximately 0.5 cases per 100,000 persons per year, and has remained stable over the last five years. The observed trend in Maine is similar to the incidence in the United States over the same period.



Cases ranged in age from 12 to 35 years with a median of 28 years. All five cases were males. Four cases had histories of travel to Africa, and one to Asia. Three of the cases were tourists, one was a missionary, and the other was a refugee/immigrant. Only two individuals reported using appropriate prophylaxis for malaria. Of these, one person was non-compliant.

Malaria is preventable by using appropriate prophylaxis and by avoiding mosquito bites through the use of insect repellents, bed nets, and protective clothing.

Tick-borne Diseases

There are four tick-borne diseases of particular concern in Maine: babesiosis, ehrlichiosis, Lyme disease, and powassan encephalitis. The highest risk to residents and visitors is in the southern, central, and coastal regions of the state. However, given that these diseases are underreported and that the geographic range of the tick population continues to expand, it is important for individuals throughout the state to be familiar with tick bite prevention measures and clinicians to be well-versed in diagnosis and management.

Babesiosis

There were eleven cases of babesiosis reported to the Maine CDC in 2005. All except one of the cases were from York County, in the southern part of Maine. Hancock County recorded the only other case of babesiosis. Cases ranged in age from 39 to 87 years, with a median of 57 years. Seven (64%) of the cases were male. Ten cases (91%) were reported between June and September. A single case was reported in December.

Since the first case of babesiosis was reported in Maine in 2001, there has been a continuous increase in the number of cases seen in the State. In 2005, the number of cases more than doubled, relative to the previous year. The case rate for 2005 was 0.9 per 100,000 persons.

Human Granulocytic Ehrlichiosis (HGE)

There were 4 cases of Human Granulocytic Ehrlichiosis (HGE) reported in Maine during the summer and fall months. There was a single case each from the counties of Cumberland, Knox, York, and Penobscot. Three of the cases were male. The median age of cases was 46 with a range of 35 to 73 years.

Human Monocytotropic Ehrlichiosis (HME)

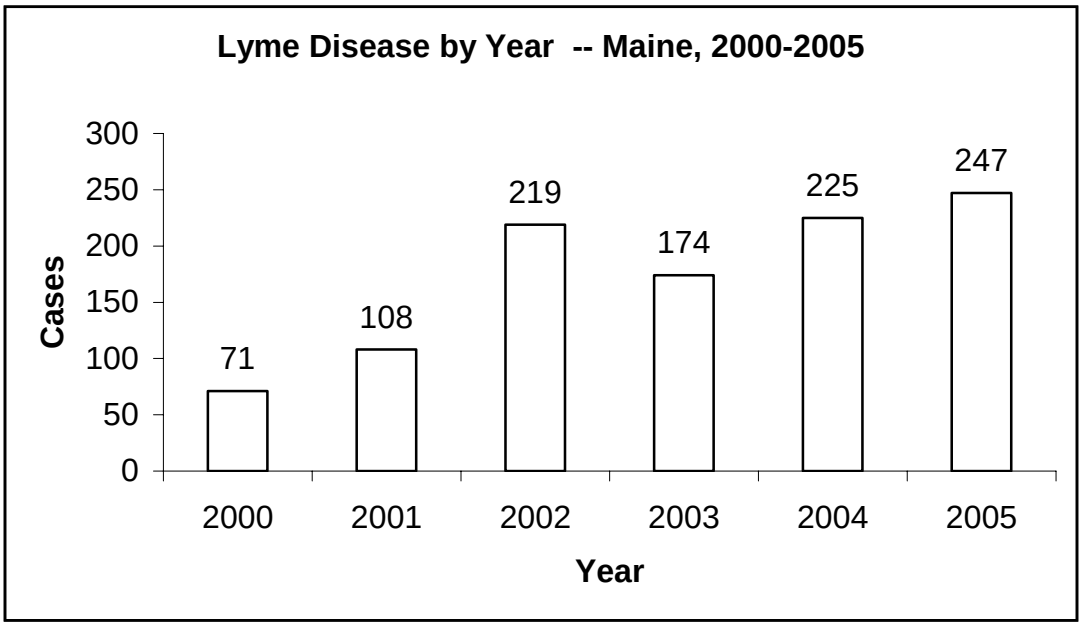
There was a single case of Human Monocytotropic Ehrlichiosis in a 44 year-old female in Maine in 2005.

Unspecified Ehrlichiosis

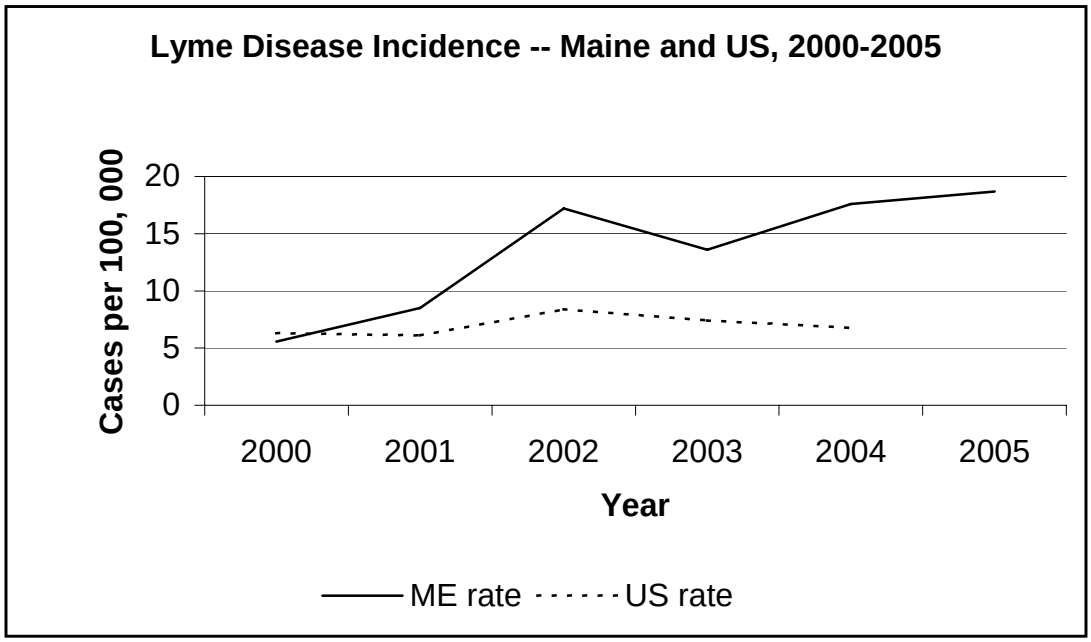
One case of Ehrlichiosis of undetermined species in a 70 year-old female was reported to the Maine CDC in 2005.

Lyme Disease

During 2005, there were 247 cases of Lyme disease reported to the Maine CDC. The 5-year median of reported Lyme disease in Maine was 219 cases.



The case rate in 2005 for Maine was 18.7 per 100,000 persons while the national case rate was 7.1 (2004).



Lyme disease was reported in 13 counties in Maine in 2005. York County accounted for the largest number of cases with 100 while Lincoln County reported the highest case rate (53.9 per 100,000 population).

Lyme Disease by County – Maine, 2005		
County	**Cases per 100,000**	**Cases**
Androscoggin	4.6	5
Aroostook	2.7	2
Cumberland	25.5	70
Franklin	0	0
Hancock	11.2	6
Kennebec	9.1	11
Knox	38.8	16
Lincoln	53.9	19
Oxford	3.5	2
Penobscot	4.1	6
Piscataquis	0	0
Sagadahoc	21.6	8
Somerset	1.9	1
Waldo	2.6	1
Washington	0	0
York	49.4	100
State of Maine	18.7	247

The age range of Lyme disease cases in Maine was 3 to 90 years. The median age was 46 years. Fifty-six percent of the cases were male. In 2005, peak incidence occurred during July and August.

Arboviruses

Arboviruses are spread by mosquitoes (West Nile virus and Eastern Equine Encephalitis virus) and ticks (Powassan virus). In Maine, Powassan has been detected in humans in the past while West Nile virus and Eastern Equine Encephalitis virus have been found in non-human species such as mosquitoes, birds, and horses.

Powassan Encephalitis

No case of Powassan encephalitis was identified in Maine during 2005.

West Nile Virus

No human case of West Nile Virus has yet been reported in Maine, however, the virus was identified in birds and mosquitoes in 2005

Eastern Equine Encephalitis

Eastern equine encephalitis was identified in birds, mosquitoes and horses in Maine in 2005. However, no human cases were reported.

OTHER INFECTIOUS DISEASES

Antibiotic Susceptibility of Selected Bacterial Pathogens

As part of continued surveillance for emerging antibiotic resistance, the Maine CDC requests that all clinical microbiology laboratories monitor selected antibiotic susceptibility patterns for specific bacterial pathogens. These include penicillin and extended spectrum cephalosporin resistance among *Streptococcus pneumoniae* recovered from blood and cerebral spinal fluid (CSF) and vancomycin resistance among *Enterococcus faecalis*, *E. faecium*, and other enterococcal species recovered from blood or other normally sterile sites, excluding urine. These data are reported on a semiannual basis.

During 2005, nine clinical microbiology laboratories reported antibiotic susceptibility data. High susceptibility patterns were reported for *Streptococcus pneumoniae* and *E. faecalis*. Intermediate susceptibility was reported for *Staphylococcus aureus* and low susceptibility was reported for *E. faecium*.

Antibiotic Susceptibility of Selected Bacterial Pathogens – Maine, 2005

Pathogen	Source	Isolates tested	Percent Susceptible				
			Ampicillin	Penicillin	Ceftriaxone or Cefotaxime	Vancomycin	Oxacillin
Streptococcus pneumoniae	Blood	52		67.3	90.4		
	CSF	4		100	100		
Enterococcus faecalis	Blood	103	100	95.1		98.1	
	Other	140	100	99.3		100	
Enterococcus faecium	Blood	26	15.4	15.4		42.3	
	CSF	14	28.6	28.6		64.3	
Staphylococcus aureus	Blood	255					59.2
	Other	3,849					60.7

Antibiotic resistance is a growing problem with many organisms. Through the reporting of susceptibility patterns of selected bacterial pathogens, an aggregate picture of antibiotic resistance can be presented. Clinical providers can benefit from this information to inform antibiotic treatment choices and educate patients and other consumers on the importance of using antibiotics for the designated amount of time and at the prescribed dosage.

Community-associated Methicillin-Resistant *Staphylococcus aureus*

Maine CDC monitors the incidence of community-associated methicillin resistant *Staphylococcus aureus* (CA MRSA) in Maine through mandatory reporting of suspect cases by public health partners. CA MRSA was defined as isolation of MRSA in a person with (1) no medical history in the past year of hospitalization; admission to a long-term care facility, skilled nursing facility, or hospice; surgery, or dialysis; and (2) no

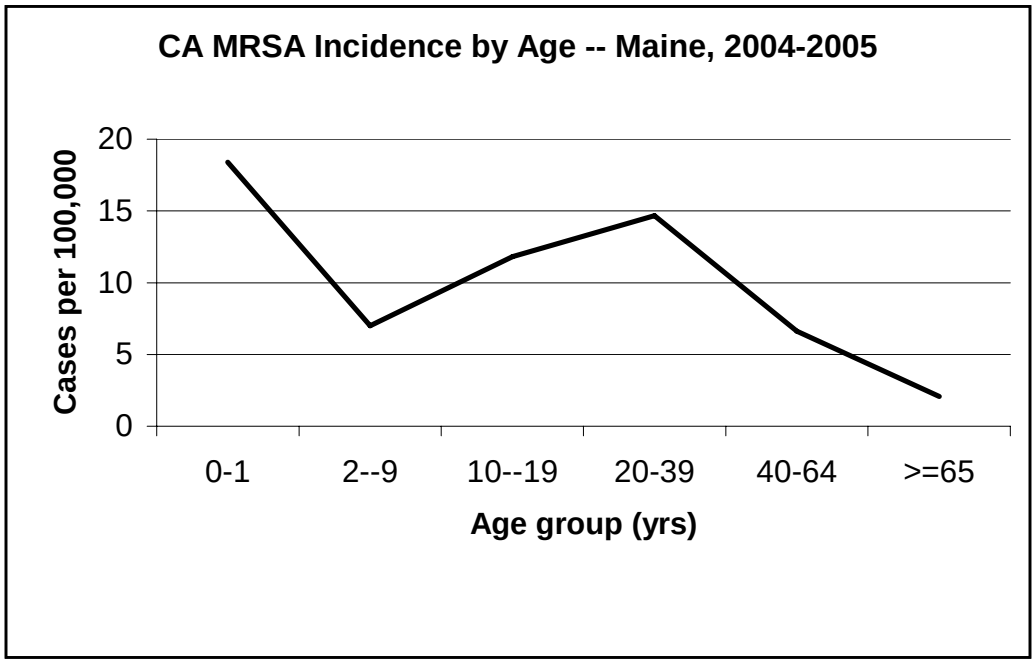
permanent indwelling medical device that passes through the skin into the body. Reports of suspected CA MRSA were investigated during February 1, 2004 to August 31, 2005.

During 2004-2005, an annual average of 111 cases of CA MRSA were reported, with an incidence rate of 8.6 cases per 100,000 population.

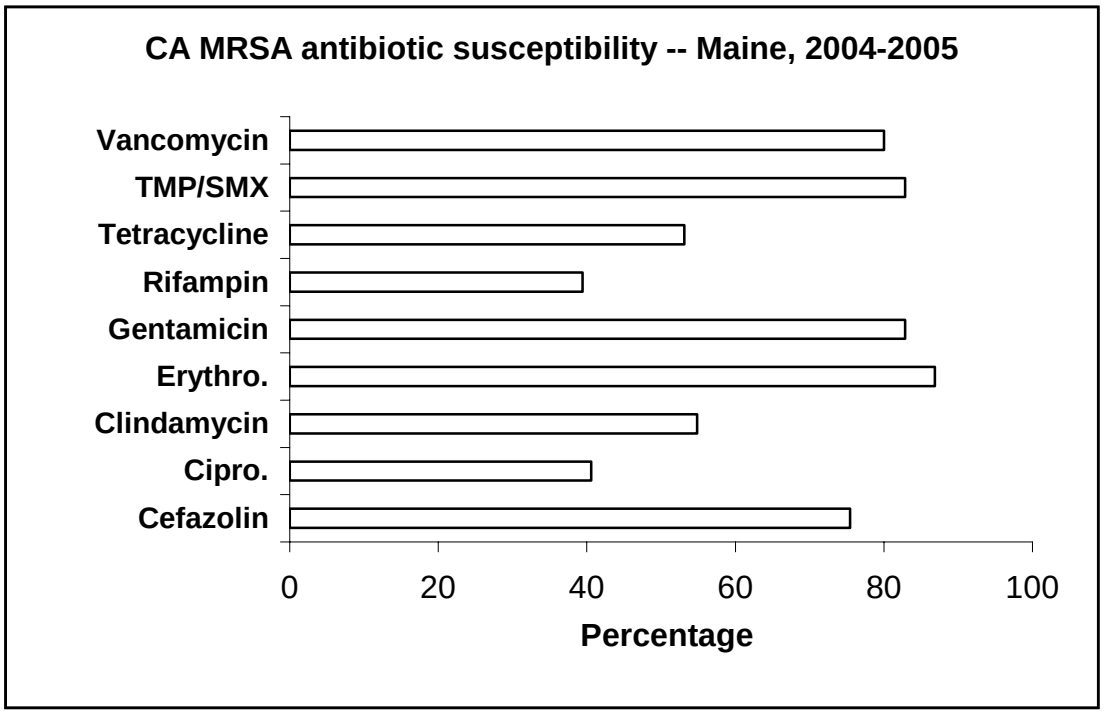
The incidence of CA MRSA varied by county. Knox County reported the highest rate of CA-MRSA. Only one county, Franklin, reported no cases during 2004-05.

Community-associated MRSA – Maine, 2004-2005		
County	**Cases per 100,000**	**Cases**
Androscoggin	7.3	8
Aroostook	10.3	8
Cumberland	9.5	25
Franklin	0	0
Hancock	8.5	4
Kennebec	8.6	10
Knox	28.7	11
Lincoln	11.3	4
Oxford	4.6	3
Penobscot	6.5	9
Piscataquis	7.3	1
Sagadahoc	7.2	3
Somerset	13.7	7
Waldo	20.9	8
Washington	7.4	3
York	2.4	4
State of Maine	7.3	111

The mean age of persons with CA-MRSA was 25 years, with a range of 1 month to 75 years. Of the 175 CA-MRSA cases reported during 2004-05, 57% were male.



Antibiotic susceptibility data are collected on all cases of CA MRSA, when available. Antibiotic susceptibility results were available on 107 cases; selected antibiotics were tested on at least 21 isolates and a maximum of 107 isolates. Nearly all CA MRSA isolates were susceptible to vancomycin, trimethoprim-sulfamethoxazole, gentamicin, and erythromycin. Rifampin should not be used as a single agent to treat MRSA infections.



The data presented here represent only those cases reported to the state, and are assumed to be an underestimate of the actual prevalence of MRSA in the community. However, the findings are consistent with the epidemiology of CA MRSA nationwide.

As an infection commonly found in the community and transmitted through household or personal contacts, providers and patients should be informed of strategies to manage and prevent MRSA infections. A high index of suspicion for MRSA is needed when managing skin and soft tissue infections. Risk factors for CA MRSA are different from those associated with healthcare-related infections, and as a result wound cultures and antimicrobial susceptibility testing play an important role in managing SSTI. Maine has adopted guidelines developed for evaluation and management of CA MRSA infections in outpatient settings, available at http://www.maine.gov/dhhs/boh/methicillin-resistant_staphylococcus_aureus.htm or upon request. Following infection control measures, such as those listed below, can reduce the transmission of MRSA.

Measures to reduce MRSA transmission

1. **Appropriate wound care**: Cover wounds with clean, dry bandages
2. **Hand hygiene**: Wash hands frequently with soap and warm water, especially after contact with patient's bandage or wound
3. **Clean environment**: Use disinfectant effective against *Staphylococcus aureus*
4. **Avoid sharing personal items**: Towels, washcloths, razors, and clothing should not be shared
5. **Inform a healthcare provider**: Tell your healthcare provider if you had contact with someone with MRSA
6. **Avoid contact with others**: Avoid contact sports and other skin-to-skin contact until your infection has healed

Maine CDC will continue to monitor CA MRSA infections in Maine. Health care providers are encouraged to report cases of CA MRSA, particularly when invasive infections are present or outbreaks are suspected. Since September 2005, epidemiologists investigate cases of invasive disease and outbreaks and provide consultation on MRSA infections.

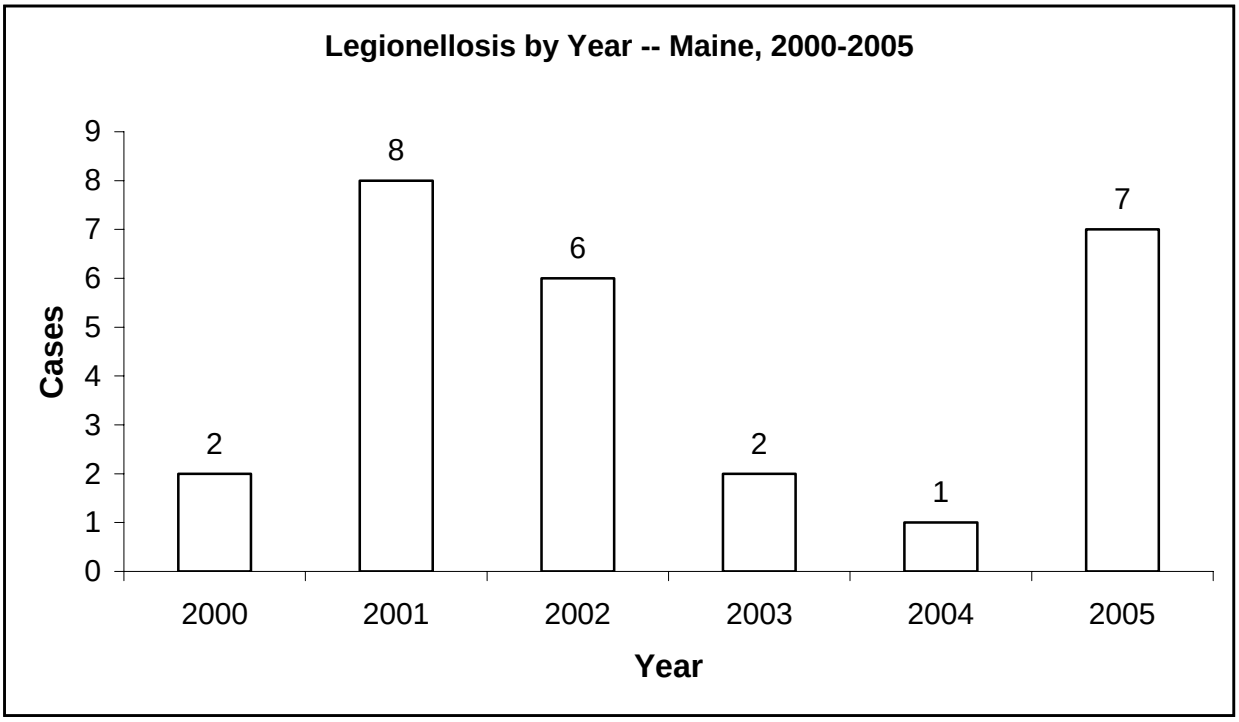
Legionellosis

Legionellosis is an acute bacterial disease with two distinct clinical and epidemiologic manifestations: Legionnaires disease and Pontiac fever. Both are characterized initially by anorexia, malaise, myalgia, and headache. Legionnaires disease is associated with radiographic pneumonia and a case fatality rate as high as 39% in hospitalized patients, particularly among those with compromised immunity. Pontiac fever is not associated with pneumonia and patients usually recover spontaneously in 2-5 days without treatment. There are 35 species of *Legionella* with at least 45 serogroups; however *L. pneumophila* serogroup 1 is most commonly associated with disease.

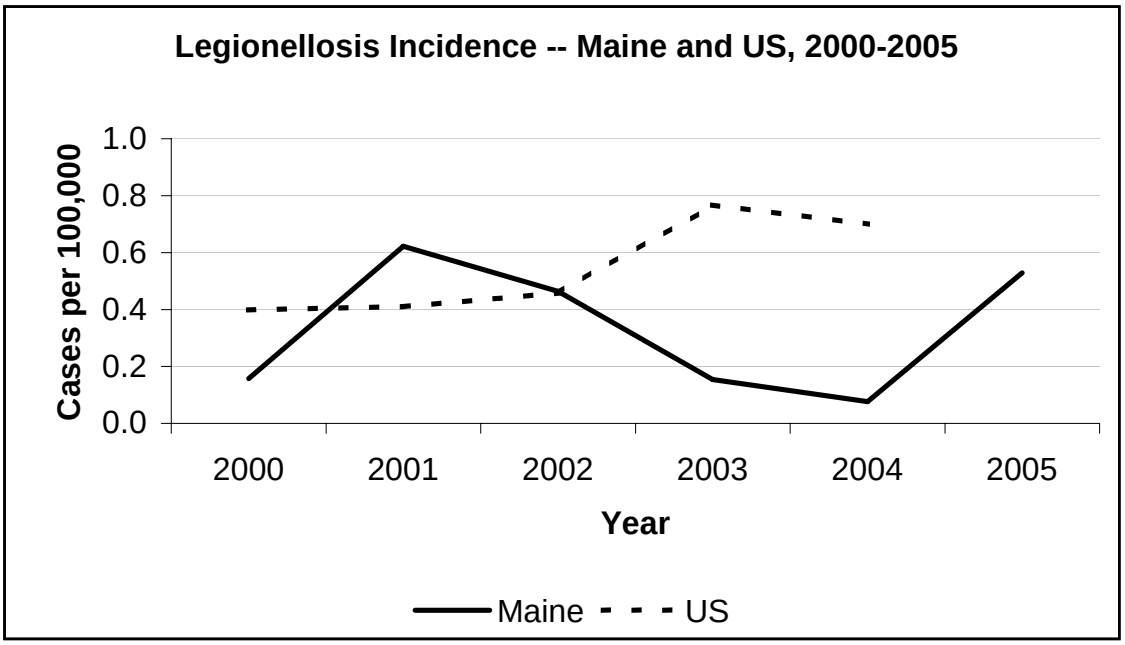
Legionella is found primarily in water sources, such as hot water systems, air conditioning cooling towers, evaporative condensers, humidifiers, whirlpool spas, respiratory therapy devices and decorative fountains. Illness occurs most frequently with increasing age, especially in patients who smoke and those with diabetes mellitus, chronic lung disease, renal disease or malignancy; and in the immunocompromised.

Epidemiologic evidence suggests Legionellosis in transmitted through airborne droplets; people usually show symptoms of Legionellosis 2-10 days after exposure to a reservoir.

In 2005, seven cases of Legionellosis were reported in Maine. A median of 4 cases of Legionellosis were report during 2000-2005 (range 1-8).



In the United States, 2,093 cases of Legionellosis were reporting in 2004 (0.7 cases per 100,000 population). In 2005, 0.5 cases of Legionellosis were reported in Maine per 100,000 population.



Legionellosis was reported in three Maine counties in 2005. York County had the highest rate of Legionellosis, with 1.5 cases per 100,000.

Legionellosis by County – Maine, 2005		
County	**Cases Per 100,000**	**Cases**
Androscoggin	0	0
Aroostook	0	0
Cumberland	1.1	3
Franklin	0	0
Hancock	0	0
Kennebec	0	0
Knox	0	0
Lincoln	0	0
Oxford	0	0
Penobscot	0.7	1
Piscataquis	0	0
Sagadahoc	0	0
Somerset	0	0
Waldo	0	0
Washington	0	0
York	1.5	3
State of Maine	0.5	7

Of the 7 Legionellosis cases reported in 2005, the mean age was 55 years (range 42-80).

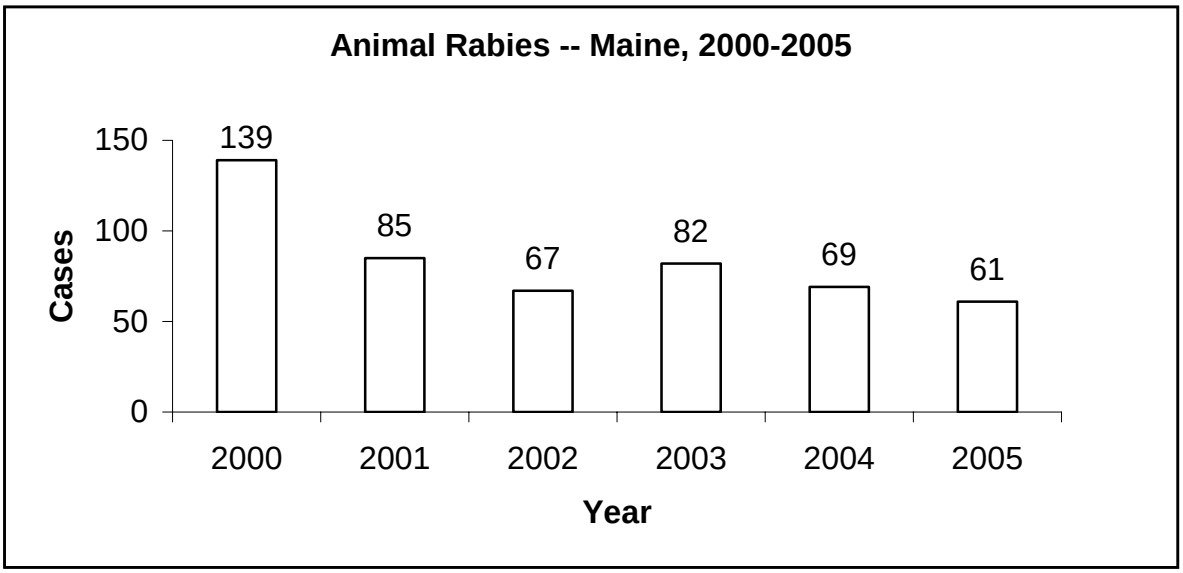
Legionnaires disease should be considered in the differential diagnosis when assessing a patient with community-acquired pneumonia; a urine antigen test to rule out Legionellosis is indicated. Once detected, patients can be treated successfully with antibiotics. To prevent Legionellosis, cooling towers should be drained when not in use, and mechanically cleaned periodically to remove scale and sediment. Tap water should not be used in respiratory therapy devices. Maintaining hot water system temperatures at 50’C (122’F) or higher may reduce the risk of transmission.

Rabies in Animals

Rabies is a viral disease of the central nervous system (brain and spinal cord) that is almost always fatal. Rabies in humans is very rare in the U.S., but rabies in animals – especially wildlife – is common. The rabies virus can infect any mammal (if it has fur or hair, it's a mammal), but infection is most common among certain mammals, such as bats, skunks, foxes, and raccoons. Rabies is very rare among small rodents (squirrels, rats, mice, chipmunks). Rabies is transmitted through contact with the saliva of an infected animal from a bite, scratch, or contact with an open wound.

Rabies is diagnosed in animals by direct fluorescent antibody testing, preferably performed on central nervous system tissue. Maine's Health and Environmental Testing Laboratory performs rabies testing on animals with human or domestic animal exposure, or animals without exposure at the submitter's expense.

A total of 683 animals were submitted for rabies testing during 2005. Of these, 61 (8.9%) were positive for the rabies virus, including 3 bats (big brown), 37 raccoons, and 21 skunks. The number of animal rabies cases identified during 2005 was slightly lower than the median number of cases reported during the previous 5 years (median 82, range 67-139). No domestic animals were identified as rabid during 2005, whereas at least one domestic rabid animal was identified during three of the previous five years.



Rabid animals were identified in 12 of Maine's 16 counties in 2005. The statewide distribution of positive animals may not be representative of rabies in the state and only represents animals submitted for testing. The majority of specimens submitted were due to interaction between the animal tested and a human or domestic animal.

Animal Rabies by County – Maine, 2005	
County	**Cases**
Androscoggin	4
Aroostook	0
Cumberland	6
Franklin	11
Hancock	0
Kennebec	8
Knox	2
Lincoln	5
Oxford	0
Penobscot	5
Piscataquis	1
Sagadahoc	4
Somerset	6
Waldo	3
Washington	0
York	6
State of Maine	61

During 2005, a total of 54 consultations regarding rabies post-exposure prophylaxis were received. The majority (n=25, 46%) of consultations involved a potential exposure where no animal was available for testing or observation. Of the 54 consultations, 26 (50%) case-patients were recommended to receive rabies PEP. The majority of PEP patients were female (54%), and the age distribution ranged from 5 months to 61 years of age with a median age of 25 years. Exposure incidents associated with PEP included contact with bats (65%), raccoons (27%), dogs (4%), minks (4%), skunks (4%), and wolf-hybrids (4%).

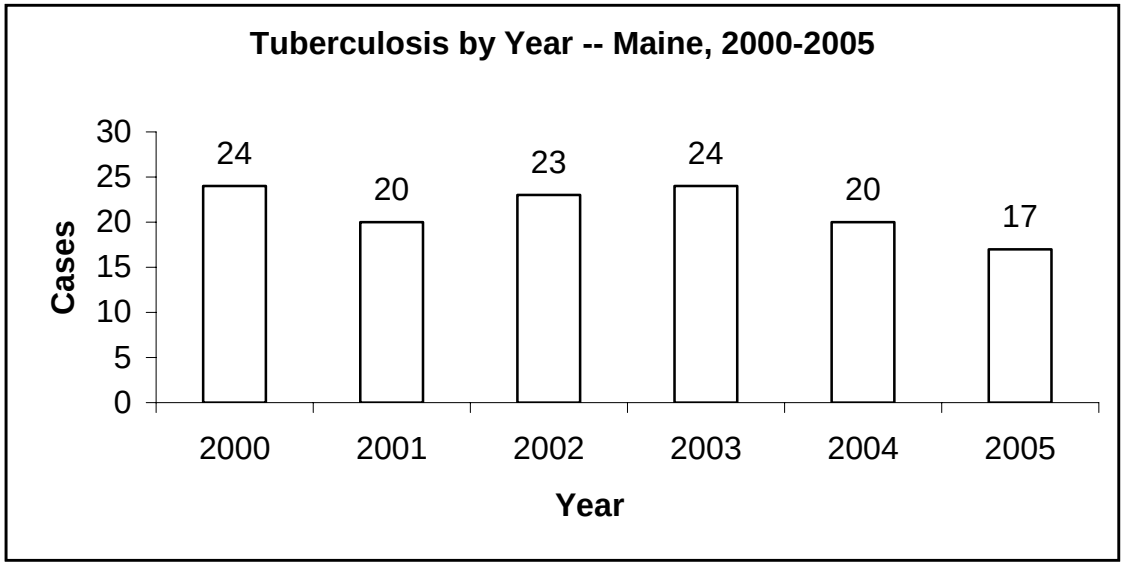
Animal rabies is found regularly among wild animals and occasionally among unvaccinated domestic animals in Maine. Recognition, prompt assessment, and management of potential rabies exposures will prevent human and domestic animal rabies in Maine. Maintaining domestic animal vaccination status and avoiding animals that are unknown are effective methods of rabies prevention. The majority of patients receiving rabies PEP in 2005 may have avoided this invasive and expensive procedure had the animal suspected of rabies been captured and submitted for rabies testing.

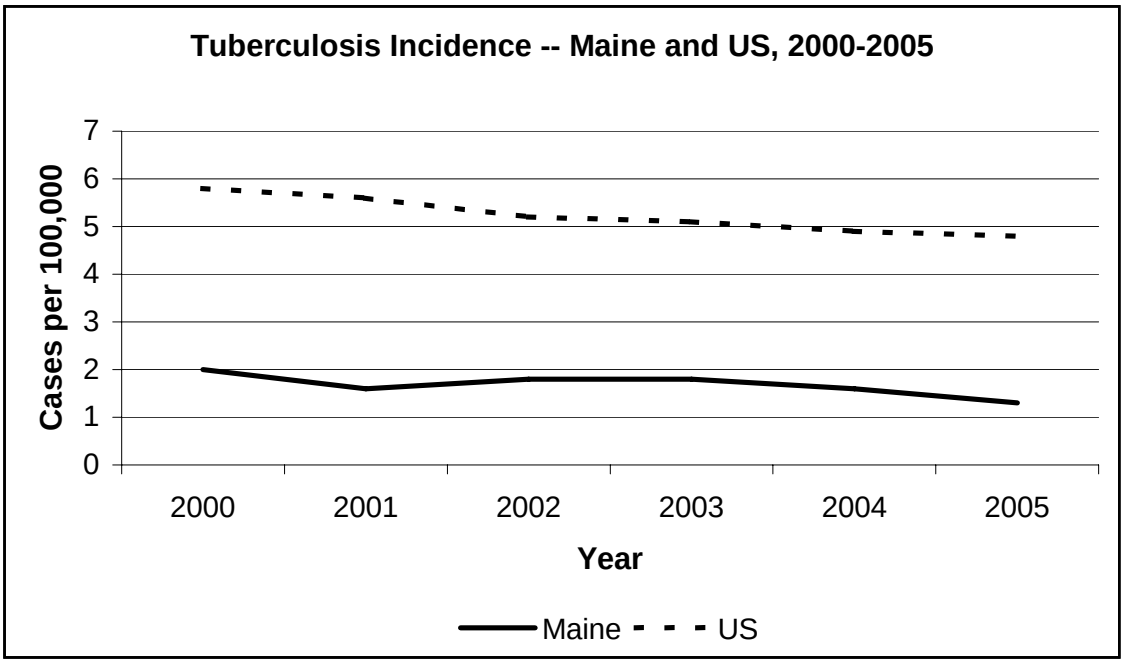
For more information on animal rabies, see the Maine CDC rabies surveillance website (www.maine.gov/dhhs/boh/ddc/rabies_surveillance.htm) and the Maine Rabies Management Guidelines (2005) posted at (www.maine.gov/agriculture/ahi/Rabies%20Management%20Guide%202005.pdf).

Tuberculosis

Maine's 2005 tuberculosis case rate of 1.3 per 100,000 continues to reflect a low incidence of disease, compared to the national case rate of 4.8 per 100,000. In 2005, 17 cases of tuberculosis were reported, compared to 20 reported cases in 2004 (five year median = 20). This mirrors the national trend of a gradual decline in tuberculosis case rates. No cases of multi-drug resistant tuberculosis were diagnosed in 2005, although one case of INH resistant tuberculosis was identified. One individual was co-infected with tuberculosis and HIV.

Although case rates are declining in Maine, it is critical that tuberculosis infrastructure be maintained. The shifting nature of Maine's demographic profile and a recent outbreak of tuberculosis among Maine's homeless population are illustrative of the need for continuing tuberculosis surveillance, monitoring of treatment, and provider education.





The geographic distribution of Maine's tuberculosis cases reflects the distribution of at-risk populations throughout the state. Higher tuberculosis incidence was noted in urban areas of greater foreign-born population density.

Tuberculosis by County – Maine, 2005		
County	**Cases per 100,000**	**Cases**
Androscoggin	3.7	4
Aroostook	1.4	1
Cumberland	2.6	7
Franklin	0	0
Hancock	0	0
Kennebec	0	0
Knox	0	0
Lincoln	0	0
Oxford	1.8	1
Penobscot	0.7	1
Piscataquis	0	0
Sagadahoc	0	0
Somerset	1.9	1
Waldo	0	0
Washington	6	2
York	0	0
State of Maine	1.3	17

With regard to age distribution, only two (12%) of Maine's 17 cases were over age 65. The median age for tuberculosis cases in Maine in 2005 was 46 years. One pediatric cases was diagnosed. Eight (47%) of Maine's 2005 tuberculosis cases were diagnosed among females.

Foreign-born persons continue to arrive in Maine in increasing numbers, both as refugees and as secondary migrants from other areas of the United States. New arrivals in Maine are primarily arriving in the cities of Portland and Lewiston. Refugees are screened for tuberculosis within weeks of arrival and more than 60% are found to have evidence of tuberculosis infection. During 2005, the TB Program re-located its Lewiston TB Clinic to a site more easily accessible for foreign-born persons. Clinic services at the site were expanded and enhanced.

In 2005, eight cases of tuberculosis were diagnosed among foreign-born persons in Maine. These individuals were born in Somalia (2), Cambodia (1), India (1), Indonesia (1), Japan (1), Peru (1), and the Philippines (1).

Persons over age 65 have traditionally comprised Maine's second highest risk group, with 35% of 2004 cases diagnosed in persons over age 65. In 2005, the percentage of persons over >65 diagnosed with TB was 12%. According to the US Census Bureau, Maine has become "the oldest state in the US", with 16% of the population over age 65. Chronic disease and previous tuberculosis infection are risk factors that contribute to increased rates of tuberculosis among the elderly population. Ongoing surveillance and provider awareness of TB risk among the elderly continues to be a priority for Maine's TB Control Program.

In 2003, an outbreak of tuberculosis occurred among eight homeless men in Portland. All eight cases completed therapy. The Maine Center for Disease Control and Prevention, Portland Public Health Division, homeless shelter providers, and corrections staff collaborated to locate and screen more than 1,000 persons who were exposed to the eight cases of active disease. Seventy percent of exposed individuals received at least one tuberculin skin test. Ten percent of the contacts were identified as tuberculin reactors. Treatment for latent tuberculosis infection was completed by 93% of the infected contacts who initiated therapy for latent tuberculosis infection. Efforts to locate and screen exposed contacts have continued for more than three years and have been resource intensive. Contact tracing for the outbreak will continue until all of the exposed individuals have been located and evaluated. During 2005, there were no additional cases of tuberculosis diagnosed among homeless individuals in Maine.

During the winter of 2004, a TB Prevention Shelter Work Group (TBPSWG) was established to respond to the urgent need for TB prevention and case finding in homeless shelters. The work group was comprised of homeless services providers and representatives from the Center for Disease Control and Prevention, Maine State Housing Authority (MESHA), and the Portland Public Health Division. The work group represents a critical partnership between public health entities and the social services support system that interfaces with homeless men and women throughout the State. The document, "Recommendations for Tuberculosis Prevention and Control in Maine's Homeless Shelters" was developed and distributed to homeless services providers across the State. The document and its accompanying Tool Kit are available at: http://www.maine.gov/dhhs/boh/ddc/tuberculosis.htm

During 2005, the TB Control Program collaborated with the Department of Corrections to enhance corrections staff awareness of tuberculosis in this high-risk setting. A “TB Corrections Tool Kit” was developed and is available at: http://www.maine.gov/dhhs/boh/ddc/tuberculosis.htm.

Appendix A: Maine Notifiable Conditions List

NOTIFIABLE CONDITIONS LIST
MAINE DEPARTMENT OF HUMAN SERVICES, BUREAU OF HEALTH

Category 1: Reportable immediately by telephone on the day of recognition or strong suspicion of disease:	Category 2: Reportable within 48 hours of recognition or strong suspicion:	Laboratory Specimen Submission:
Chickenpox (varicella) ▪ Admission to hospital, any age ▪ Adults >18 years, any clinical setting Diphtheria Hepatitis A, B, and C (acute) Hepatitis, acute (etiologic tests pending or etiology unknown) Measles (rubeola) Meningococcal disease Outbreaks ▪ Foodborne (involving 2 or more persons); waterborne; and respiratory ▪ Institutional ▪ Unusual disease or illness Pertussis Poliomyelitis Rabies (human and animal) Rubella (including congenital) *Staphylococcus aureus* disease, reduced or resistant susceptibility to vancomycin Tuberculosis (active and presumptive cases) **Category 1 Diseases that are possible indicators of bioterrorism:** Anthrax Botulism Brucellosis Gram positive rod septicemia or meningitis, growth within 72 hours of inoculation in laboratory Outbreaks of unusual disease or illness Plague Q fever Ricin Poisoning Smallpox Staphylococcal enterotoxin B pulmonary poisoning Tularemia Venezuelan equine encephalitis	Acquired Immunodeficiency Syndrome (AIDS) Babesiosis Campylobacteriosis CD4 lymphocyte counts <200/ul or <14% of total lymphocytes Chancroid Chlamydia (*c. trachomatis*) (all sites) Chickenpox Chickenpox-related death Creutzfeldt-Jacob disease, <55 years of age Cryptosporidiosis Cyclosporiasis Ehrlichiosis Encephalitis, arboviral *Escherichia coli* 0157:H7 (and all other hemorrhagic *E. coli* enteritis, shiga producing *E. coli* strains) Giardiasis Gonorrhea *Haemophilus influenzae* disease, invasive, all serotypes Hantavirus pulmonary syndrome Hemolytic-uremic syndrome (post-diarrheal) Hepatitis B (chronic, prenatal) Hepatitis C (chronic) Human Immunodeficiency virus (HIV) infection* Influenza-like illness outbreaks Legionellosis Listeriosis Lyme Disease Malaria Meningitis, bacterial Meningococcal invasive disease Methicillin-resistant *Staphylococcus aureus* suspected to be community-acquired Mumps Psittacosis Salmonellosis Shiga toxin-related disease (gastroenteritis) Shigellosis Streptococcal disease, invasive Groups A and B *Streptococcus pneumoniae*, invasive disease Severe Acute Respiratory Syndrome (SARS) Syphilis Tetanus Toxoplasmosis Trichinosis Vancomycin-resistant *Staphylococcus aureus* *Vibrio* species, including Cholera West Nile virus infection Yellow Fever *Soundex patient identifier or patient name required	**Directors of Laboratories are to submit cultures of the following organisms to the Maine Health and Environmental Testing Laboratory for confirmation, typing, and/or antibiotic sensitivity including but not limited to:** *Bordetella pertussis* *Clostridium botulinum* *Clostridium tetani* *Corynebacterium diphtheria* *Escherichia coli* 0157:H7 *Francisella* species *Haemophilus influenzae,* invasive *Legionella* species *Listeria* species *Mycobacterium* species (TB complex only) *Neisseria meningitidis* *Salmonella* species, including *S. typhi* *Shigella* species *Streptococcus,* Group A, invasive only *Streptococcus pneumoniae,* invasive only *Vibrio* specie *Yersinia pestis* **Antibiotic-resistant Diseases in Special Category:** Other diseases caused by selected antiobiotic-resistant organisms are to be reported semiannually (twice each year) in aggregate form by clinical laboratories. These include: ▪ Invasive disease caused by methicillin-resistant *Staphylococcus aureus* (MRSA) ▪ Invasive disease caused by vancomycin-resistant Enterococcal species ▪ Invasive disease caused by penicillin-resistant *Streptococcus pneumoniae*

Who must report:
Health Care Providers, Medical Laboratories, Health Care Facilities, Administrators, Health Officers, Veterinarians

When to report:
- Category 1 diseases are reportable immediately by telephone on recognition or strong suspicion of disease
- Category 2 diseases are reportable by telephone, fax, or mail within 48 hours of recognition or strong suspicion of disease

What to report:
Disease reports must include as much of the following as is known:
- Disease or condition diagnosed or suspected
- Case's name, date of birth, address, phone number, occupation and race
- Diagnostic laboratory findings and dates of test relevant to the notifiable condition
- Health care provider name, address and phone number
- Name and phone number of person making the report

Complete Rules for the Control of Notifiable Conditions at http://www.maine.gov/dhs/boh/ddc/DiseaseReporting.htm

HOW TO REPORT:

TELEPHONE: 1-800-821-5821 (24 hours a day) *OR* **FAX: 1-800-293-7534 (24 hours a day)**

The Department of Human Services
Bureau of Health

October 21, 2003

Appendix B: Case Definition for Infectious Conditions

Most case definitions for infectious conditions under public health surveillance in Maine are available at **http://www.cdc.gov/epo/dphsi/casedef/case_definitions.htm**

Appendix C: Map of Maine

Maine Department of Health and Human Services
Center for Disease Control and Prevention
11 State House Station
Augusta, ME 04333-0011

John Elias Baldacci
Governor

Brenda Harvey
Commissioner

Dora Anne Mills, MD, MPH
Director, Maine Center for Disease Control and Prevention

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